WORCESTER

CITY OF PROSPERITY

Sixteenth Annual Convention
National Metal Trades Association
The Bancroft
Worcester, Massachusetts
April 20-22, 1914

By Donald Tulloch
Worcester, Massachusetts
1914

Copyright, 1914
By Donald Tulloch
Worcester, Mass.

OCT 28 1914

Publishers
The Commonwealth Press
Worcester, Mass.

©CL.A388116
720.2

A Dedication and Confession

To the
Employers and Employees of Worcester—
The Mechanics of this Glorious City,
Who made it what it is,
I dedicate this Book.

***

Worcester is the City of my Adoption,
Coming here an Entire Stranger,
Like Thousands of other Strangers,
From "Auld Scotia's Shores."—
Land of the Free and the Brave,
To the Land of Democracy and Opportunity.

A Quarter of a Century's residence
Within its inviting Borders,
Has taught me that,
For the Worker,
For the Employer,
For every one from every Clime,
There is not a more attractive place than
Worcester, "Heart of the Commonwealth."

DONALD TULLOCH.

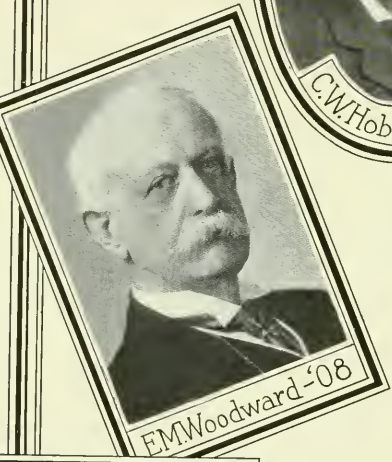
April the Twentieth,
Nineteen Hundred and Fourteen.

Past Presidents Worcester Branch N.M.T.A.

F.E.Reed '04-'05

G.F.Brooks '06-'07

C.W.Hobbs '02-'03



E.M.Woodward-'08

C.E.Hildreth-'09

We Are Seven

A.E.Newton '10-'11

J.W.Harrington '12-'13

We Acknowledge Thanks

TO many friends for courtesies extended in the assembling of the facts for this Volume, and in the fitting-up of the various parts, making it the machine describing machinery; To the Publisher—the Commonwealth Press, we make our bow; for assistance from Our Friend Rev. Epler's "Master Minds"; To William A. and Marion W. Emerson for cuts from "Old Landmarks"; "The Worcester of 1898", by F. P. Rice, also aided us very considerably in getting at facts; To my wife, Isabella M. Tulloch, to John R. Back and others for research work and preparation of articles, it is only fair to show public appreciation.

D. T.

John W. Higgins

President, Worcester Branch
National Metal Trades Association

The Philosophy of Learning a Trade

TO make a good living; to have a happy family; to make preparation for hard times; to wear overalls in the shop with the same dignity as good clothes are worn on Sunday; to be confident you are laying a sure foundation for any future success; to feel that you are master of your work, and that you share the creative spirit. This is the philosophy of learning a trade.—*Milton P. Higgins.*

The Bancroft—Convention Building

Worcester, Massachusetts Charles S. Averill, Manager

To Metal Trades Men—Greeting

HE COMING to Worcester for its Annual Convention of the National Metal Trades Association is an event fraught with unusual importance to Massachusetts and the industrial states of New England.

Never before has this influential aggregation of employers of labor in the United States and Canada held its sessions in a city so small in population as Worcester.

Never before has a similar body of manufacturers, nearly 800 firms employing over 300,000 people, with a pay-roll of $185,000,000 annually, ever met in this city.

Never before in the history of Worcester has there gathered together manufacturers representing any one industry who have devoted almost a score of years to studying and solving the various intricate problems which engage the attention of capital and labor.

No combination of employers in the world have lavished so generously of their time and thought and money in the education of the workmen in their craft, in voluntarily adopting measures to safeguard their interests while at work, to furnish them with equipment and shops of the most modern type and hygienic environment, to improve their condition of toil, to reward their efforts with the highest compensation possible, and make provision for their support and that of their families against sickness and death.

Worcester is honored with the visit of the Metal Trades craftsmen. The Association has done itself justice in coming to a section of the United States which stands out pre-eminently as a machine tool manufacturing centre.

Worcester County Mechanics greet the skilled Machinists of North America. The Heart of the Commonwealth beats warm and strong for you all. The Gray Eagle of Asnebumskit looks down upon you benignly and bids you welcome.

Worcester has contributed in full measure of eminent men and women who have enriched the world with glorious achievements in all lines of human endeavor. Statesmen, scholars, scientists, inventors, journalists, humanitarians, manufacturers, philanthropists, merchants, farmers, mechanics,—last but by no means least, have all added their quota to the greatness of Worcester.

This volume will tell in somewhat abbreviated form how the Heart of the Commonwealth came to be a Mighty Big Workshop; how its throbbing, pulsating hives of varied industry are turning out and transporting to all quarters of the globe those sterling products which help to rejuvenate the world and make it Busier, Brighter, Better.

Tower of Old Union Depot, and New Union Station,
Worcester, Mass.

It is also intended to convey some impression of the noble citizens—men and women—who in days gone by as well as the present have materially aided in establishing Worcester as the third city of importance in the New England States.

The book is in no sense a guide to Worcester, simply a small compendium of men and women, machines and machine tools, inventors and mechanics, places and people of human interest, incidents of note—a potpourri—all thrown in to the metal trades melting pot, printed and bound into a thing we call a book.

Explanation must be offered the members of the Worcester Branch for the entire inadequacy of the reference made to their workshops and factories. It was not the intention of the writer to exploit the works of the Branch members or the character of their product, and reference has only been made briefly in the case of a few where it appeared that an invention or something entirely out of the common required special reference.

It was felt that there was no necessity for advertising our firms, as they are sufficiently known in the metal trades throughout the world. The halftone cuts indicating the size of the plants will convey to the visitors some impressions of the composition of workshops in this section, when lack of time will prevent them from visiting these plants for themselves.

From the wide scope of the articles in the Book, and the great variety of industries touched upon, it will be readily seen that while this volume is ostensibly published for the special benefit of metal trades people, it is not circumscribed to the exclusive channels of metal trades lines, but that it gives fairly adequate attention to the leading industries of the city.

We trust it may be regarded in a modest way as one of the means which have been taken recently to eulogize Worcester in all its attractiveness, and place it in the estimate of the world where it rightly belongs—as one of the most kingly cities to be born in, to be educated in, to toil in, to die in and to be buried in (for even Worcester's Cemeteries are very attractive looking), and to go to heaven from.

If this book, then, will interest readers and furnish a clearer perspective of "Who's Who and What's What in Worcester," it will have supplied the ambition of the writer and sufficiently rewarded him for the somewhat arduous task of compilation and editing.

DONALD TULLOCH.

April 20, 1914.

Institute Park Bridge, Worcester, Mass.

"Cead Mille Fealthe"—100,000 Welcomes

THIS represents the fraternal greetings of the National Metal Trades Association members in the Worcester Branch to their fellow members throughout the United States and Canada on the occasion of the Sixteenth Annual Convention of that Association in The Bancroft, Worcester, April 20-22, 1914.

It is fitting that Worcester—"The Heart of the Commonwealth," of the Old Bay State, should have the honor and privilege of the Annual Convention. Here in this city and vicinity were born many of the inventors of machines, machine tools and labor-saving devices which have been a dynamic force in revolutionizing industries the world over. Here, also, is the cradle of invention, of ingenuity, in which has been nurtured those allied industries of the metal trades which have brought honor and distinction to Worcester as one of the pre-eminently great mechanical centres of the universe.

More machine tool builders, machinists and metal trades people are to be found in Worcester and suburbs than in any other county on the American continent.

Worcester is a name to conjure with when speaking of machinery. Fitchburg, Nashua, Barre and Hudson boast of splendid plants for the manufacture of machines, steam engines, saws and steam pumps; Southbridge is famous for its optical goods, cutlery and shuttles; Athol for small machine gauges, tools, vises, cutters and twist drills; Warren for steam pumps; Orange for sewing and the Dexter valve reseating machines; Winchendon for woodworking machinery; Gardner for chair making.

Worcester has manufactured sufficient wire to girdle the globe a thousand times. Worcester has manufactured as many corsets as would girdle the world's women. Worcester could manufacture annually as many envelopes as would carry the world's correspondence.

With this brief preface, delegates may drink in the inventive genius characteristic of Worcester. We welcome them to the Heart of the Commonwealth.

They have the freedom of the city.

The metal trades people of Worcester feel a unique honor conferred upon them by virtue of their presence. We welcome them, and trust their stay will be one long round of pleasure and profit, and when they leave us, that they will carry away with them pleasant recollections of their visit to the Heart of the Commonwealth. We will share with them much of the profit which will come from their daily sessions. In all their deliberations we trust they will have uppermost in their minds the thought—the high ideal—that the success of the industries they represent must be reflected in their kindly, considerate attitude towards their employees, without whom it would have been impossible for them to succeed. We hope that the strong

feature of their meeting in Worcester will be the fostering of that spirit of mutual trustfulness and fair dealing between employer and employee which alone can make for industrial triumph and general happiness.

For more than a decade there has been industrial peace in this city in metal trades lines. For this, credit is due both the employer and employee. The former realized that in order to secure the most skilled workmen required to maintain the quality of the world-known products made in Worcester, it was imperative that the best wage rate possible should be paid and general working conditions good. The workmen knew that in order to gain the best positions in the Worcester shops it was necessary to be classed among the skilled mechanics. With these two leading features settled in the labor problem, the rest of the essentials was a matter easy of accomplishment. The result has been that workmen have performed their task honorably and well, and employers have done their part in bringing about the principle of the square deal.

No better workmen in the metal trades lines can be found anywhere the world over than in the city of Worcester. The industrial supremacy of Worcester is due to the combined efforts of the employers and employees.

Worcester made the cables which gave the delegates the first intimation that the National Metal Trades Association Convention had chosen the Heart of the Commonwealth as its meeting place in 1914.

Fitchburg's big railroad machines have made possible the strength and speed of our giant locomotives.

Worcester builds the railroad cars those engines pulled, bringing from afar the friends who have come to be with us on this most auspicious occasion, and a Worcester man invented the upper berth which makes railroad travel comparatively comfortable.

Worcester manufactures the envelopes with which the National Office informed the delegates of the Convention program.

Worcester capital—much of it among the members of the National Metal Trades Association, built the Bancroft where the Convention is so pleasantly situated.

Worcester County farmers produce the delicatessen with which the delegates have been regaling themselves for several days and which have made them all look so happy.

But not alone in Mechanics—in arts and crafts, is Worcester and its suburbs pre-eminent. This city and vicinity have given to the world many men and women of national and international reputation. It was the home of Hoar and Burritt the statesmen, Bancroft the historian; President John Adams taught school in Worcester; Edward Everett Hale ministered here; Carroll D. Wright, world-known statistician, was the first president of Clark College; Elias Howe, inventor of the sewing machine, was born here, as were also Clara Barton, founder of the Red Cross; Eli Whitney,who discovered the cotton gin; Gen. Artemus Ward, first commander-in-chief of the American Revolution; Dr. William Morton, who conquered pain by discovering the first successful anaesthetic; Draper Ruggles, Joel Nourse and John C. Mason, inventors of agricultural machinery, who perfected

the modern plow; J. C. Stoddard, who invented the first steam calliope; Asa Hapgood, who invented the upper berth in the modern railroad sleeping car. In H. H. Bigelow's rink, on Foster Street, on February 22, 1887, was run the first electric car in the United States; the Declaration of Independence was first read in Massachusetts by Isaiah Thomas from the west porch of the old Old South Church on the Worcester Common, July 14, 1776; Luther Burbank, the plant creator, was born in Lancaster; while Worcester was also the home of Dorothea Lynde Dix, "an unveiled Sister of Mercy'—redemptress of the world's insane; G. Stanley Hall, world-known educator; John Bartholomew Gough, the great apostle of temperance, buried here. Worcester is the birthplace of Andrew Green, who has been styled "the Father of Greater New York;" the boyhood days of Ex-President W. H. Taft were passed in Millbury; the first auto made in the United States was manufactured by Elwood Haynes, a Worcester Tech graduate. It was Charles Burleigh, of Fitchburg, who invented the rock-drill and compressor in 1867, which made it possible to bore the Hoosac Tunnel when all other efforts had failed. Burleigh was at that time employed in the Putnam Machine Co.

Gen. Rufus Putnam, Rutland, eminent engineer of Washington's Staff, designed the fortifications for Dorchester Heights, that made the British evacuate Boston. Putnam was pioneer in organizing the settlement of Ohio from Massachusetts.

Few readers there are who cannot hark back to childhood days and remember the story of "Mary and Her Little Lamb." It was at Sterling, a dozen miles from Worcester, where was born Mary Sawyer, whose little lamb followed her to school one day to the astonishment of the teacher and the great delight of Mary's schoolmates.

Through the instrumentality of Dr. Melvin G. Overlock of Worcester, for the first time in the history of the world, the humanitarian arrangement has been made by Worcester employers of labor among metal trades and other lines, for the care of their employees who are afflicted with tuberculosis, at a State Sanitarium for the probationary period of 13 weeks.

One of the strikingly important features of the lives of great leaders of men and women which Worcester has produced, as it is chiefly true of other sections of the world, is, generally speaking, the humble home which gave them birth. It is only one more proof of the oft-repeated statement that true greatness invariably comes from the home of the modest and humble—necessity makes for genius and invention, toil and industry, honor and fame. In no greater degree are those features exemplified than in the life work of the famous people mentioned who have made Worcester renowned.

Worcester is a unique city. There isn't anything just like it in the Western Hemisphere. First and foremost it is supremely a manufacturing and railroad centre, and it is also a city of homes. It is a city of mechanics whose languages represent the nationalities of the universe, yet it is renowned as a centre of music, art, culture, refinement.

It is a progressive city, entering actively into all those features of the modern world which makes for civic betterment, civic pride, and yet it is a conservative city, building up its interests in a manner which makes for soundness, for time, and keeping in view the future of a great metropolitan centre. It is a municipality about which there has never been anything said to smirch its fair name, a city of churches, educational institutions, a thrifty prosperous populace.

Few cities can show such tremendous growth in population. It has placed 3,000 people to its population every year on an average for 30 years. In the last 15 years it has added 50,000 people within its gates. An hour's ride by train, and Worcester can come in touch with 3,000,000 people, and that fact is only true of one other city in the United States—New York.

It is eleventh in value of machine shop and foundry products in the United States, and first in wire making industries. Its machine shops and foundries, nearly 100, give employment to 5,500 people. Worcester mechanics own their own homes.

It is estimated that there are 1,500 industrial plants employing 35,000 mechanics in Worcester, earning about $30,000,000 a year in the manufacture of products valued at $80,000,000. There are savings in the local banks equal to $375 for every man, woman and child in the city.

D. T.

"Cead Mille Fealthe" Again!

And this time it is to the Members of the National Machine Tool Builders Association

Since the above welcome was written to the Metal Trades Men, one or two enthusiastic Boosters for Worcester made a final endeavor to secure the Convention of the National Machine Tool Builders Association for this City.

It was a laudable object and Worcester was the logical city. All that was needed was a leader, and he was found. The result is that although the Convention had been scheduled for Hotel Astor, New York, April 23-24, it gave Worcester people much joy when it was finally decided at the last moment to hold it on the same dates in The Bancroft, Worcester.

Therefore, we welcome our kindred brethren of the Machine Tool Builders Association, and hope they will enjoy their visit to the Heart of the Commonwealth.

D. T.

Fair Worcester

By Rev. C. F. Hill Crathern.

Sung to the tune of "Fair Harvard"

Fair Worcester, thy name and thy glory we sing,
As we crown thee, the Queen of the years,
Our love and allegiance we gratefully bring
For with thee are our hopes and our fears.
O! "Heart of the Commonwealth" tender and strong,
As it throbs with the passion of life,
For thy peace and prosperity ever we long,
And the end of all discord and strife.

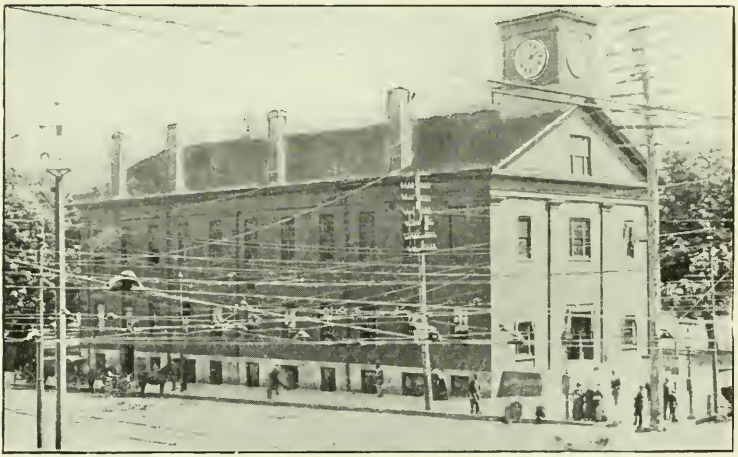
We remember with pride how our fathers of old,
Saw the star of hope shining on high,
How they followed the gleam of its silver and gold,
As it shone and illumined the sky;
With the plow and the ax, with a courage divine,
They wrested their bread from the sod,
They laid their foundations with plummet and line,
As they builded the City of God.

Through the forests primeval they walked in the light
Of a faith that was noble and grand,
'Neath the roof of the stars by their watchfires at night,
They dreamed of the long Promised Land.
From the scenes of their youth and their childhood so dear,
In the pioneer days of the state,
They turned to the hills with a song and a cheer,
And their hearts all aflame and elate.

In the church and the school, in the home of our birth,
We will honor their zeal and their love,
We will treasure their names at the altar and hearth,
While they rest from their labors above.
O! valleys and hills where their footsteps once trod,
Shout aloud your glad triumphs, nor cease,
Where the wilderness stood blooms the Garden of God,
With the angels of love and of peace.

May the future be bright as the glorious past,
And our sons be as great as our sires,
May Righteousness, Justice and Truth ever last,
To inspire and control our desires,
May the Stars and the Stripes ever wave o'er our land,
And our watchword "Prosperity" be,
May "Obedience to Law" with true liberty stand,
For "Fair Worcester," the home of the free.

Sagamore John
Worcester's First Native



Worcester's First City Hall

Worcester—City of Prosperity

Worcester — A City of Homes.

Worcester — A City of Schools.

Worcester — A City of Churches.

Worcester — A City of Manufactures.

Worcester — A City of Mechanics.

Worcester — A City of Railroads and Railways.

Worcester — A City of Stores.

Worcester — A City of Industrial Peace.

Worcester — A City of Metal Trades.

Worcester — A City of Health.

Worcester — A City of Wealth.

Worcester — A City of Parks.

Worcester — A City of Brave Men and Noble Women.

Worcester — A City of Newspapers.

Worcester — A City of Higher Educational Institutions.

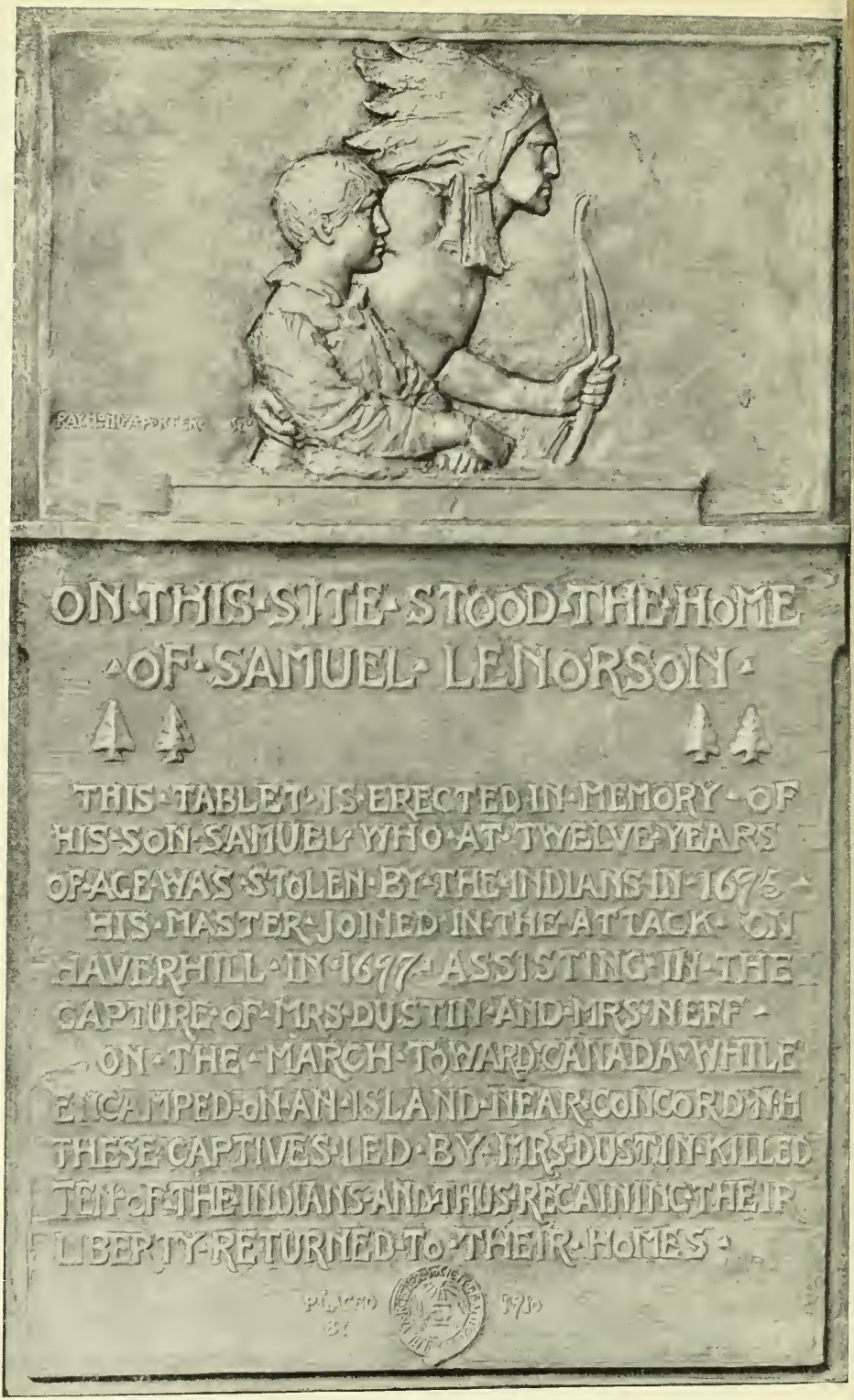
Worcester — A City of Art.

Worcester — A City of Music.

Worcester — A City of Culture.

Worcester — A City of Renown.

WORCESTER—ONE GRAND CITY



Tablet on Davis Tower, Lake Park

Worcester First Settled

WORCESTER was first settled under the Indian name of Quinsigamond in 1673, when Ephraim Curtis of Sudbury bought land and built a log house on Lincoln Street, between Adams Square and the City Farm. The rude dwellings of a few other newcomers were already built when King Philip's War broke out and the settlement was abandoned. When the second settlement was attempted its name was changed to Worcester, meaning "war-castle." The renewed hostility of the Indians caused a second desertion of the place in 1701 by all except the family of Digory Sargent, who was himself killed while defending his garrison house, and his wife and five children taken prisoners. The wife and mother, fainting with grief and fear impeded the flight of the savages and while ascending the hills of Tatnuck, a chief stepped out of the file and with one blow of the tomahawk relieved the obstruction to their march.

The third and permanent settlement dates from 1713, when Jonas Rice came from Marlboro and located on Sagatabscot, now Union Hill, his farm including some of the lands cultivated by Digory Sargent. The spot is marked by the Rice Boulder on Heywood Street.

Another episode of those times was the kidnapping of Samuel Leonard, or Lenorson, by a marauding band of Indians. The account is given in full on the tablet placed on Davis Tower, Lake Park, by the Worcester Society of Antiquity. Before the coming of the white settlers Pakachoag Hill was the headquarters of a tribe of Nipmuck Indians under Sagamore John. Another tribe occupied the Tatnuck Hills, and still another Wigwam Hill, near the Lake. The Nipmucks, under the influence of John Eliot and Daniel Gookin, made an advance in civilization and some had professed Christianity. Sagamore John, who surrendered in Boston, affirmed that he was "forced for fear of his own life to join King Philip against the English."

The deed of purchase from the Indians was a curious paper and it bears the date of July 13, 1674, and is as follows:

"Bee it known to all men by this present writing that wee, John, alias Hoorrawannonit, or Quigaowassett, Sagamore of Packachoag, and Solomon, alias Woonaskochu, Sagamore of Tatassit, together with the consent of our kindred and people, and for, and in consideration of twelve pounds of lawful money or the full value thereof in other specie to our content, within three months after the date hereof, well and truly be paid and satisfied and pt. whereof viz; two coats and four yards of trading cloth, valued at twenty six shillings, we do acknowledge to have received in hand, as earnest, of Daniel Gookin sent of Camb, Esq. and of Daniel Hinchman of Boston, Brewer, in behalf of themself and Capt. Thomas Prentice and Lt. Richard Beeres and the rest of the General Court's Com-

mittee appointed for the management of a new plantation granted by said court, conteyning eight miles square or the contents thereof, beeing to the westward of Marlborrow near Quinsigaamud ponds and on each side of the roadway leading towards Connecticott; now know ye yt wee, ye sd John and Solomon, Sagamore aforesaid and upon ye terme aforesaid, unto ye Sd Daniel Gookin, Thomas Prentice, Daniel Henchman, Richard Beeres and ye rest of ye people admitted or to be admitted by ye said committee to bee inhabitants of ye new plantation, and to their heyrs, executors, administrators and assigns forever, in fee simple, all and every part of our civil or natural rights, in all and singular the broken up land and woodland, swamp, meadow, woods, trees, rivers, brooks, ponds, mineralls or anything whatever lyeing and beeing within that part of land, conteyning eight miles square, or the contents thereof, to be layd out by ye sd persons or their order in time convenient. To have and to hold the premises and every part thereof unto them the sd Daniel Gookin, Thomas Prentice, Daniel Henchman and Richard Beeres and all ye rest of ye inhabitants admitted or to be admitted planters there and unto Ym and Yr heirs forever truly, and absolutely without any lett, molestation or disturbance, of us or by from or under us, forevermore as our heyrs or assignes and we do promise upon the finishing of the payments, to make full any of our kindred or people or any claims and ample deeds of writing for the same according to law. In witness to the truth hereof, wee ye sd John and Solomon alias Hoorrawannonit, and Woonaskochu, have hereunto set our hands and seals this thirteenth day of July, 1674.

Solomon, alias Woonaskochu
(Seal and mark)
John, Alias Hoorrawannonit
(Seal and Mark)

Signal, sealed and delivered in the presence of us
Onnomog (his mark) Sagamore of Ocoonomesset
Namphow (his mark) Sagamore of Wanessit
Joseph Thatcher of Chabanakoichee (his mark)
Nosoowowit (his mark)
Noah Wiswell, present
D. Gookin

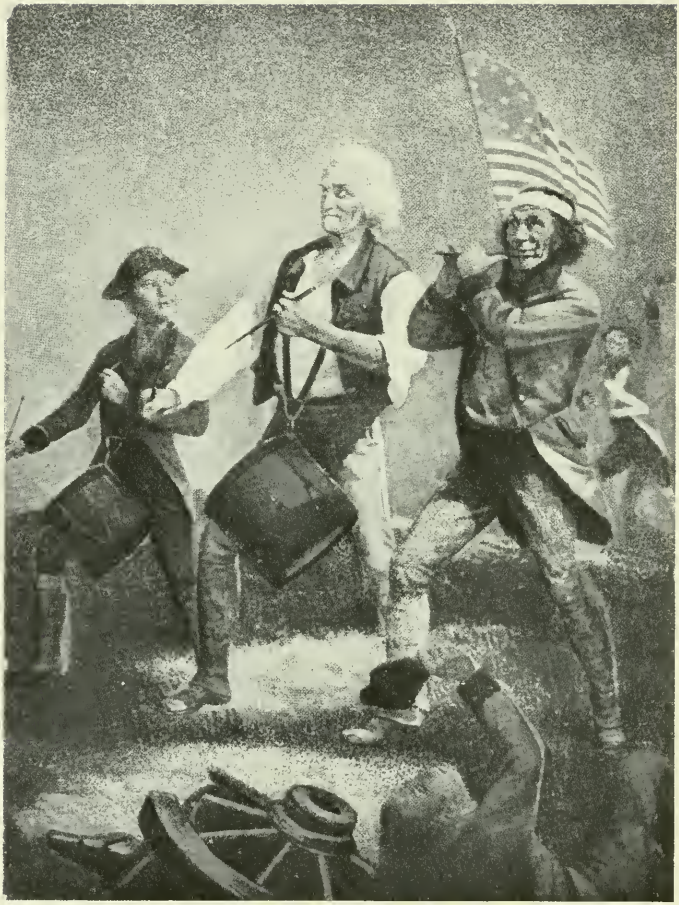
Final payment received August 20th, 1676.

In September, 1674, the distinguished Indian philanthropist, John Eliot, of Roxbury, accompanied by his historian, Daniel Gookin, came to Quinsigamond Plantation to visit the tribe of Indians that dwelt about here. They met Sagamore John of the Nipmuck tribe, who lived near Pakachoag Hill, now known as Mt. St. James, the site of the College of the Holy Cross, and Sagamore Solomon of Tatassit Hill, now the suburb known as Tatnuck. The meeting was held at Pakachoag and at its termination Captain Gookin was more than fully satisfied of the desirability of the plan chosen for the new settlement. The kind and gentle manner of Eliot made a strong impression on the Indians to promise to extend a hearty welcome to the newcomers.

The plans were then fully completed and during the year 1674 quite a number of settlers began to arrive and build upon, and cultivate the land assigned to them in different sections of the place. This was followed up with greater vigor in 1675, and everything was progressing finely, the inhabitants "building after ye manner of a towne," when the terrible and destructive war of King Philip began, and after Mendon and Brookfield had been destroyed, the Indians descended suddenly upon the new settlement of Quinsigamond or Worcester, surrounded it, and created such havoc that it was soon deserted. Every building that had been erected by the settlers was burned by the Indians, December 2, 1675. For a number of years after this no settler dared to return here, but in 1684 their fear so abated that they began to come back and another settlement was started, only to be again devastated a few years later. At the second attempt to revive the settlement in 1684, the rights of all those who had previously proved their title to the soil were confirmed to them by the General Court. Inducements were offered for the settlers to come back, and encouragement was offered to others to come here and take up land. A vacancy had been caused upon the committee having charge of the plantation, by the death of Lieut. Richard Beeres, who was killed by the Indians, and Captain John Irving was appointed in his place. September 10, 1684, a petition was presented to the General Court to have the plantation named Worcester, which was granted October 15, 1684. The following is a copy from the original records of the Massachusetts Colony of the General Court's grant for the change of name:

"Upon the motion and desire of Major General Gookin, Captain Prentice and Captain Dan Henchman, the Court grants their request, *i.e.*, that their plantation at Quinsagamond be calld Worcester & yt Capt Wing be added & appointed one of the Committee there in ye roome of the Deceased & that the towne Brande be this ⊢."

A tract of one hundred acres was laid out for Captain Gookin on the east side of Pakachoag Hill, overlooking what is now included in Quinsigamond Village, and one of eighty acres on Racoon Plain, near that part known as New Worcester. Another of eighty acres was laid out for Captain John Wing on the west side of Mill Brook, north of the present Lincoln Square, and several settled in the vicinity of Adams Square as it is now named. The land was taken up little by little but no accurate record of these early settlers was preserved, for the Indians again caused complete desertion of the place, during Queen Anne's war which began soon after 1702. But nothing daunted, in 1713, the proprietors, undiscouraged by the two former failures, came back, and began once more to build. In October of that year Col. Adam Winthrop, Gershom Rice and Jonas Rice addressed the General Court in behalf of themselves and others, representing their desire "to endeavor and enter upon a new settlement of the place from which they had twice been driven by war" and "prayed the countenance and encouragement of the Court in their undertaking; for such directions and regulations as should be thought fit to make them defensible in case of a new rupture of the Indians; and for a proper com-



The Spirit of '76

mittee to direct in ordering prudentials of the plantation till they come to a full settlement."

This petition was duly granted, and Hon. William Taylor, Col. Adam Winthrop, William Dudley, Lieut. Col. John Valentine and Captain Thomas Howe were appointed as the new committee.

On the 14th of June, 1714, a detailed report was presented by this committee of its proceedings in adjusting the claims of the former settlers and for promoting the future prosperity of the plantation. It is dated that it had allowed 31 rights of ancient inhabitants, and admitted 28 persons to take land on the condition that they pay twelve pence per acre for their planting or house lots only, being the amount collected of the original settlers, and of building and dwelling upon each lot, whether it was acquired by purchase or grant. It was recommended that the provision for the support of the ministry and school be accepted, instead of the reservation to the commonwealth made in 1668. The committee also asked, as it had spent much time in receiving claims for grants of land, made many long journeys to affect adjustment of controversies, advanced considerable sums of money, and expected to have the care and trouble of the affairs of the town for many years, that a grant of forty acres should be assigned to each of them, with proportion of future divisions, as just compensation for their services. This report was accepted and received the approval of Gov. Joseph Dudley, June 14, 1714.

Previous to this time, however, Jonas Rice who had been a planter here during the second settlement, returned on October 21, 1713, and it is from this date that the permanent settlement of the town can be dated. He built his home on Sagatabscot Hill, now known as Union Hill, and not far from where the fine buildings of the Worcester Academy are located. The original home was destroyed nearly 75 years ago. Jonas Rice remained here with his family alone in the forest, the only inhabitant of the place, until the early spring of 1715, when his brother, Gershom Rice, came as the second settler. Jonas Rice was a good and true man and commanded the respect and confidence of all who came after the settlement began to rise again from its ashes. He held many town offices; was frequently representative to the General Court; one of the justices of the Court of Common Pleas. He died September 22, 1753, at the age of 84 years. The third settler was Nathaniel Moore, of Sudbury, a man of great Christian character, and who was deacon of the first church from its foundation.

The first male child born in Worcester was Adonijah, son of Jonas Rice, who was born November 7, 1714. He lived to be 88 years of age.

Soon thereafter the shadows of oppression began to darken the land, and the first rumblings of the Revolution which finally upheaved the Colonial Government, were felt here. When the appeal to arms was made, many of the inhabitants most distinguished for their talent, influence and honor, adhered with constancy to the cause of the King. In the struggle of warfare and the hostility of the party feelings they were drawn into semi-exile, and loaded down with reproval. Standing as they did, they entertained grave doubts whether that period had arrived when

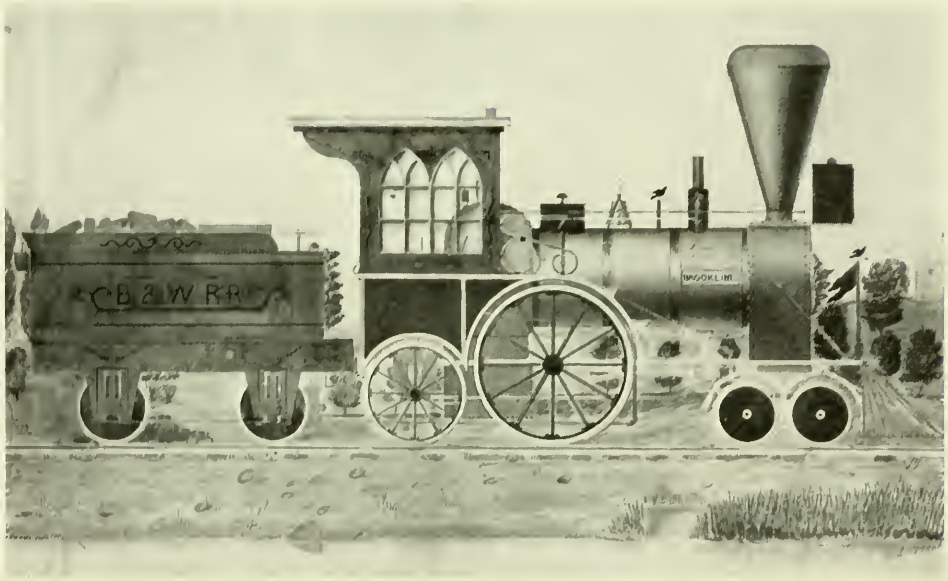
Ginery Twichell, of Worcester, the intrepid Post Rider, who became a Railroad President and Member of Congress. On January 23, 1846, he rode from Worcester to Hartford, over 60 miles, through a deep snow, in three hours and twenty minutes

it was possible to declare independence, and they did not care to hazard all they had on the very uncertain issue of a war with England. The very earliest expression of opinion on Revolutionary matters on record here was in 1765, when Capt. Ephraim Doolittle, the town's representative to the General Court, was instructed "To join in no measure contemplating the stamp act." The indignation of the people on the promulgation of the act imposing a duty on tea was fully aroused here and severe resolutions were drawn up, exposing the feelings of the inhabitants. As the non-consumption argument prevented the sale of the obnoxious article by the merchants, mint and sage were extensively planted in the gardens and were used as a beverage. Those who did continue the use of tea indulged in the luxury as if they were committing a crime, and with the utmost secrecy.

From this time to 1773 no especial doings of the inhabitants marked the progress of the spirit of independence. The great influence of the Royalists, prevented any public expression of the high-toned patriotism which in other places was growing day by day more intense. The struggle between the patriotism of the people and the loyalty of the powerful influence and wealth arrived at a crisis in this town in 1774, and terminated in the absolute defeat of the adherents to the King. Most of the protesters were made to publicly recant while those who did not, were so persecuted that they were glad to leave the town for more congenial quarters.

The difficulties between the mother country and the Colonies were fast hastening matters to a decision. An appeal was made to arms, and preparation was actively but silently made, and the "Minute-Men" here were advised to exercise and perfect themselves in discipline. In March, 1775, they were ordered to train half a day in each week to be ready for an emergency, as it seemed that their service might be required in defence of the country very soon. They were. Before noon on the 19th day of April, 1775, an express rider came dashing into Worcester, shouting as he passed through the streets, "To arms! to arms! The war has begun." His horse bloody with spurring, and dripping with sweat, fell exhausted near the meeting house, and another was procured, the alarmist mounted and the tiding was carried on through the country. The bell rang out the alarm, cannons were fired, and messengers hastened to every part of the town to collect the soldiers.

As the news spread, men hastily left their implements of husbandry in the fields where they were working, to seize their muskets and in a very short time, "the Minute-men" were paraded on the Common, under command of Capt. Timothy Bigelow, After prayer by the Rev. Mr. MacCarty, they took up the line of march for Lexington and Concord. They were soon followed by many others under command of Capt. Benjamin Flagg and on that day 110 good men and true left Worcester to enter the great battle for liberty. Worcester furnished a large number of men during the Revolutionary War, many of whom became prominent in the battles of those days Among these was Col. Timothy Bigelow, in whose memory the marble monument was erected on the Common. It is a curious coincident in this connection, that upon the day the monument was being



Locomotive "Lion," built at Bury Works, Liverpool, in 1835. In use by Boston & Worcester Railroad for thirty-two years, during which time it ran over 700,000 miles

dedicated with a great ceremony, came the startling news of the firing upon Fort Sumter, the first alarm of another long and bloody struggle for the country's honor.

On Saturday, July 14, 1776, the Declaration of Independence arrived here on its way from Philadelphia to Boston. This instrument, the eloquent echo of sentiments expressed in less splendid form from almost every village throughout the Colonies, long before they were promulgated in that document, the "Magna Charta of freedom" was hailed with greatest enthusiasm. It was read for the first time in Massachusetts from the front of the Old South Church, by Isaiah Thomas, to the assembled crowd. On Sunday, after divine service, it was again read in church. Measures were immediately adopted for a proper celebration of the event, and on Monday following, the very earliest commemoration of the occasion since hallowed as the national anniversary took place in the town. The Massachusetts Spy of July 24, 1776, gives the following account of the day:

"On Monday last, a number of patriotic gentlemen of this town animated with great love for their country, and a desire to show their approbation of the measures lately taken by the General Council of America assembled on the "Green" near the Liberty pole, when after having displayed the colors of the thirteen Confederate Colonies of America, the bells were set ringing, and drums abeating. After a while the Declaration of Independence of the United States was read to a large and respectable body, among whom were the Selectmen and Committees of Correspondence, assembled on the occasion, who testified their approbation by repeated huzzas, firing of musketry and cannon, bonfires and other loud demonstrations of joy.

"When the arms of that tyrant in Britain, George III of exorable memory, which in former times decorated, but of late disgraced the Court House in this town, were committed to the flames and consumed to ashes, there was renewed joy. After this a select company of the Sons of Freedom repaired to the tavern lately known by the King's Arms, which odious signature of despotism was taken down by order of the people, which order was most cheerfully complied with by the Inn-Keeper, when a long list of toasts were then drank and an evening spent with joy on the commencement of a new era. The greatest decency and good order was observed, and at a suitable hour each man returned to his respective home."

The King's Arms, at which the demonstration took place, occupied about the site of the former Lincoln House and now where Poli's Theatre is located. It was a very celebrated place in those days, and had been honored by the entertainment of George Washington, while on a journey in 1775, from Philadelphia to Cambridge.

Gen. George Washington, first president of the United States, also visited Worcester, October 23, 1789. Gen. Lafayette passed through Worcester in 1834, on his way to visit the country he had helped to liberate half a century before.

Boston Passenger House, Erected in 1835

Worcester—"City of Prosperity"

Quinsigamond—Indian Name.

Worcester means "War Castle."

"City of Prosperity"—and that's why the National Metal Trades Association is holding its 16th Annual Convention in the "Heart of the Commonwealth."

Worcester is the second city in population in Massachusetts and the third in the New England states. It was incorporated a town in 1722 and a city in 1848. It covers an area of about 24,586 acres or 38 square miles. It has had a marvellous steady growth for an inland city. The population of Worcester 200 years ago was 200; now it is nearly 200,000.

The population in 1722 was	200	
1790	2,095	
1800	2,411	
1810	2,577	
1820	2,962	
1830	4,172	
1840	7,497	
1850	17,049	
1860	24,960	
1870	41,105	
1880	58,291	
1890	84,655	
1900	118,421	
1910	145,986	
1914	166,025	(Water Census)

New Union Depot, opened in 1911

Worcester's City Hall

THE new city hall occupies practically the whole of the west side of the Worcester Common. It also occupies the site of the old Old South Church and the old city hall. From the west porch of the church was first read in public in Massachusetts, the Declaration of Independence, written ten days before in Philadelphia.

The new city hall was built of Milford granite by Norcross Brothers, of Worcester. It is 219 feet long, 85 feet wide, has 60 rooms, is in Italian renaissance style of architecture, with a beautiful Florentine tower, rising 205 feet from the ground.

The old hall which gave place to the present one, contained the largest audience room in Worcester until the erection of the Mechanics Hall in 1857. In the old city hall in 1848 was born the Free Soil party. Here, in 1854, Eli Thayer, of Worcester, announced his "Plan of Freedom." In that hall resounded the clarion notes of such eminent people as Abraham Lincoln, Daniel Webster, Charles Sumner, Garrison, Wendell Phillips, Everett, Winthrop, Douglass, John Brown, Hale, Louis Kossuth, Fr. Matthew, John B. Gough, Henry Clay, Jenny Lind, W. M. Thackeray, and many others.

The last public gathering in the old city hall proper was May 4, 1898, when the surviving voters of 1848 assembled to say farewell to the venerable hall, sacred to them, and soon to be pulled down.

The clock on the old City Hall, was originally on the old Old South Church, and now occupies a prominent place in the tower of the Coes Wrench Co.'s plant. It bears this inscription, "Abel Stowell made me in 1800."

The cornerstone of the new city hall was laid September 12, 1896. The building was dedicated April 28, 1898, and occupied May 1, 1898. The cost of the buildings and furnishings was $650,000.

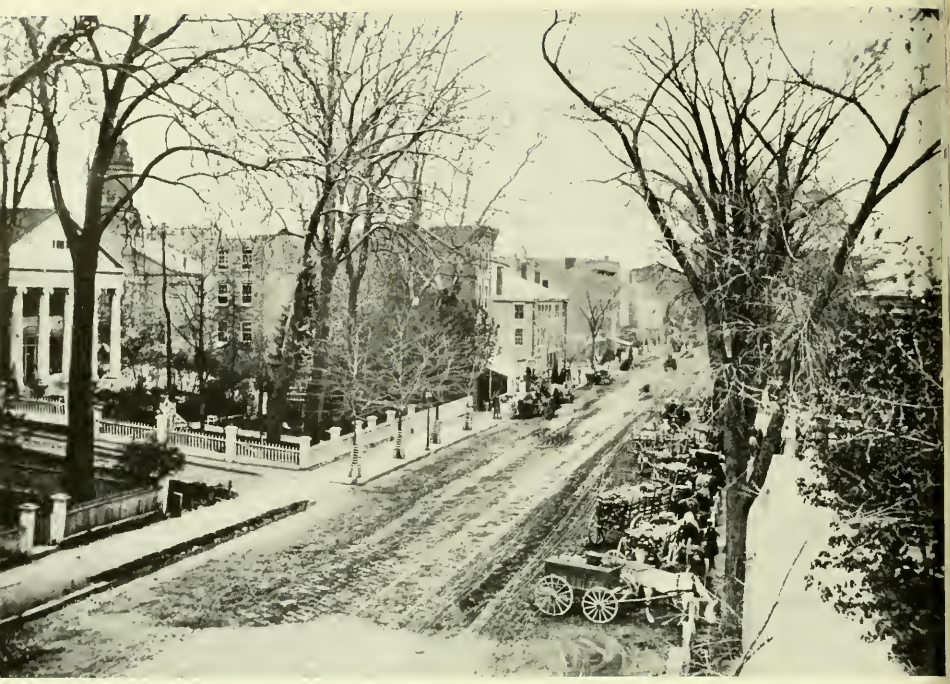
New Worcester City Hall

The Tablets Placed in the Corridor of New City Hall, bear the following inscriptions:

HERE
IN 1719
THE INHABITANTS OF WORCESTER
ERECTED THE HOUSE OF WORCESTER
REBUILT IN 1763
TAKEN DOWN IN 1887.
FROM ITS PORCH ISAIAH THOMAS
JULY 14TH 1776 READ TO THE PEOPLE
THE DECLARATION OF INDEPENDENCE.
IT WAS IN THAT HOUSE LATER KNOWN AS THE
OLD SOUTH MEETING HOUSE
AND JUST NORTH WHERE STOOD UNTIL 1898
THE HALL BUILT IN 1825
THAT THE PEOPLE OF WORCESTER
HAVE GOVERNED THEMSELVES FROM
THE BEGINNING AS TOWN AND CITY
IN FREEDOM AND IN HONOR

THE COMMON HARD BY
SET APART AS A TRAINING FIELD IN 1684
WAS THE PRINCIPAL BURIAL PLACE
OF WORCESTER FROM 1724 TO 1824.
HERE GATHERED THE SOLDIERS
OF WORCESTER COUNTY
FOR THE WAR OF INDEPENDENCE
AND THE WAR FOR THE UNION

HERE
JUNE 28, 1843
WAS THE GREAT MASS MEETING
WHICH ORGANIZED
THE POLITICAL MOVEMENT
BEGUN TO PRESERVE TO FREEDOM
THE VAST TERRITORY
BETWEEN THE MISSISSIPPI AND THE PACIFIC
AND ENDED BY THE ABOLITION
OF SLAVERY THROUGHOUT THE CONTINENT



Main Street, Worcester, Half Century ago, looking north from City Hall

Main Street, Worcester (same location), in 1914

From Old Worcester to New Worcester

IN AN UPPER corridor of the Worcester City Hall stands two suits of armor, the gift of the City of Worcester in Old England to Worcester in New England, and they are only one gift of many such courtesies which have been exchanged between the mother and daughter cities and which have linked and kept loyal the association between the two countries. The suits of armor are part of a gift of nine suits which, with brass cannon, were presented to the Old Worcester by a former member of the Worcester corporation as having been used by the soldiers of King Charles the Second at the battle of Worcester, September 3, 1651.

Col. Albert Webb, V. D., J. P., a member of the corporation, and son of a former mayor, was chosen by the corporation to the important task of gift bearer and of formally presenting them. This presentation took place the morning of November 6, 1908, Col. Webb delivering his credentials to Mayor James Logan. These contained a letter from John Stallard, Mayor of Worcester, and dated from the Guildhall, Worcester, October 16, 1908.

In the early history of Worcester, when this newer Worcester was in the making, there were various exchanges of letters and sentiments; later there were gifts of books from the public libraries. Bricks from the Worcester Cathedral were put into the building of All Saints Church, the First Episcopal (Church of England) church in Worcester.

Worcester Post Office

George Merrill Wright—Machinist, Farmer, Mayor

GEORGE M. WRIGHT, treasurer and general manager of the Wright Wire Co., one of the largest manufacturers in his line in the United States, was born in Clinton, April 12, 1865. He came of that sturdy New England stock—the Wright family—many members of which have made names for themselves in the machinery and wire weaving industry.

After attending the public schools of Clinton, he took the business course at Foster's Business College, Worcester, and finished at the Monson Academy. In 1882 he began drafting machinery the necessary preliminary to his later success, under the supervision of his father, George F. Wright, an expert mechanical engineer, who was master mechanic of the Clinton Wire Cloth Co. for 20 years.

At the end of a year the son had shown great adaptability for new ideas in mechanics, and it was but a short time after he was found experimenting with the construction of machinery of his own devising. It was not George M. Wright alone that began work in Palmer as a machinist, it was George M. Wright the product of noted mechanics, of the spirit and inheritance of true men who made the United States what it is.

In 1885, Mr. Wright, in company with his father, George F. Wright, and brother, Herbert M. Wright, entered into the manufacture of wire cloth and netting in a small way at Palmer, under the firm name of the Wright Wire Cloth Company. Of this company he was appointed business manager. At its inception the company employed about six workmen. In 1889 the company gave employment to 60 men, and at that period removed its business to Worcester, changing the firm name to the Wright & Colton Wire Cloth Company, until in 1889, when upon the retirement of S. H. Colton, George M. Wright was elected treasurer. From a small beginning, with limited capital, this business has been developed into a big concern, with a capital stock of $250,000, giving employment to about 500 workmen, and doing an annual business of about $1,000,000.

The weaving factories at Worcester, and the large plant at Palmer, are fully equipped with machinery and appliances of improved type, some of which were invented and patented by Mr. Wright.

The public life of Mr. Wright was begun in 1900, when he was elected councilman of Ward 6.

He also served in the Council the following year and was elected alderman in 1902.

In 1912 he was elected mayor of Worcester by 2,330, largest plurality ever given candidate for first term, and re-elected December 9, 1913, by 5,843, the largest plurality in the history of the city. He is a 32nd degree mason.

Worcester's Municipal Affairs

THERE HAVE been 33 mayors of Worcester since the time of the first Chief Magistrate, Levi Lincoln in 1848.

There are 213 miles of public streets in Worcester, 23 miles of paved streets, 93 miles of brick sidewalks, 9 miles of concrete sidewalks, 34 miles of granolithic sidewalks, 66 miles of sanitary and surface sewers.

There are 1,058 arc lights, 587 Welsbach gas street lights, 1,918 Tungstens.

Water is supplied the city from ten reservoirs with a storage capacity of 3,445,480,000 gallons. The total cost of the water works up to December 1, 1913, was $6,086,705.58. The income from water rates up to that date was $448,366.95.

An extensive sewage purification works has been established at Quinsigamond Village, one of Worcester's suburbs, which had a valuation December 1, 1913, of $793,000. It was first operated in 1888, and has been added to almost annually since that time and covers 74 acres. The entire sewer system of Worcester has cost $5,500,000.

There were 15,447 dwellings in Worcester December 1, 1913, and the valuation of the city at that date was $153,058,968. The assessed polls in 1913 were 53,696, and the rate of taxation in 1913 was $17.60.

In December, 1913, there were 26,270 registered male voters and 802 female voters.

Worcester possesses a very efficient Police Department. There are 27 officials, 186 patrolmen and 20 reserve patrolmen, members of the department. There are two police precincts which have been established for more than 30 years. There are 55 call stations situated throughout the city.

The City Ordinance providing for the establishment of a night watch, was passed by the City Council May 6, 1850. Following the passage of this ordinance, Mayor Chapin appointed as the first regular night watchmen, eight men to fill these positions. Worcester was incorporated as a city February 29, 1848. Section 8 of the Act provided that the Mayor and Aldermen should have power to appoint constables, city marshal, assistant marshal, and all other police officers. Up to this time there were twelve constables, no salaries being paid them, the only source of income being fees from the town.

There is an equally up-to-date Fire Department consisting of 18 fire stations, 236 men with 288 signal boxes and 2,473 hydrants. A splendid equipment of fire engines, motor driven hose wagons and other apparatus. The scheduled valuations of fire stations is $323,550 and all real estate amounts to $417,913.

Worcester has long been known as an educational centre.

There are four high schools here, and they have a total of 3,451 pupils enrolled as follows:

Classical High	825
English High	913
South High	900
North High	813

The original cost of the High School Buildings was:

Classical High	$130,000
English High	$190,000
South High	$180,000
North High (Salisbury Street	$70,000
North High (Sycamore Street)	$18,000

The number of graduates from high schools June, 1913, was:

Classical High	98
English High	134
South High	103
Total	335

There were no graduates from the North High Schools as they have only within a year been changed from grammar to high schools.

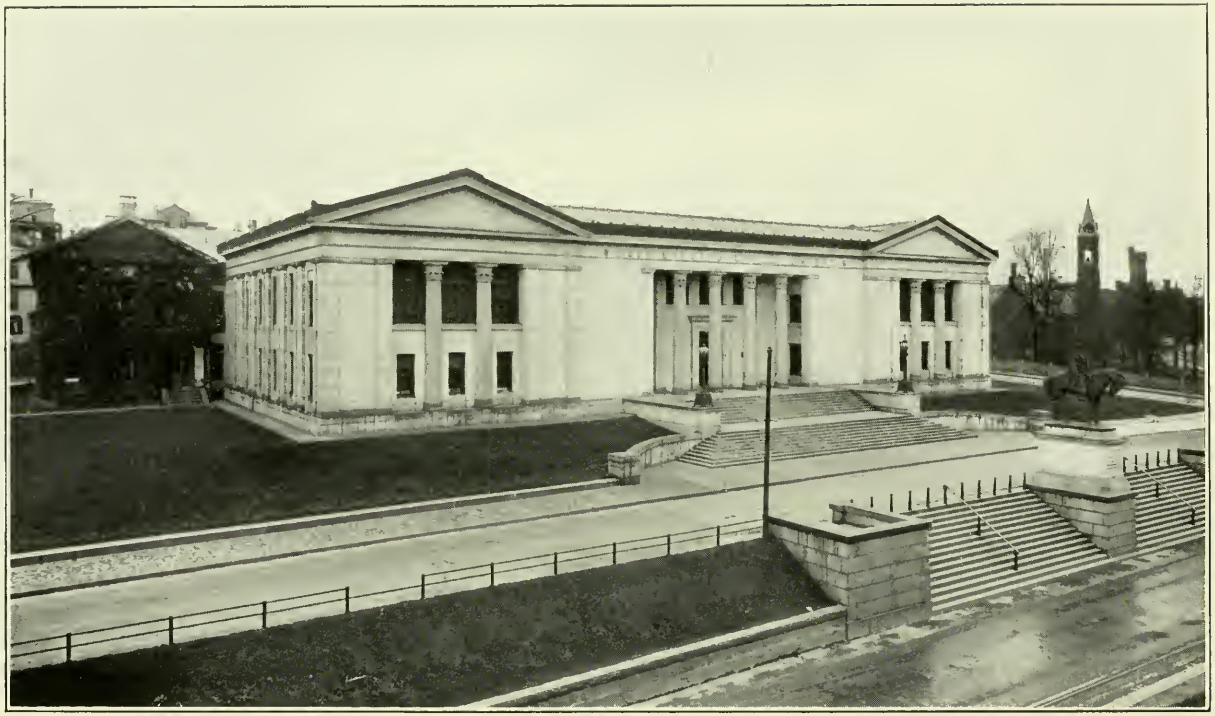
There are 50 graded schools in the city, with 22,946 pupils taught by 741 teachers. The evening schools have 125 teachers for 2,532 pupils, representing the 42 different nationalities in Worcester's population. In addition to the above, Worcester also has two trade schools—one for boys, established in 1909, and one for girls established in 1911. Special courses are laid out for the boys in machine work, steam, gasoline and mechanical engineering, carpentering, patternmaking, cabinetmaking, and other trades.

The estimated cost of buildings erected in Worcester in 1912 and 1913 was $11,477,095, surely indicating Worcester to be a City of Prosperity, comparing very favorably with any city its size in the country.

Worcester has never suffered from a business depression such as is common in other cities. This is due more particularly to its diversified industries.

It has also been an unusually favored community so far as industrial troubles are concerned, for there have been few labor difficulties in Worcester in any line of industry the past quarter of a century. This is due very largely to the liberal influences in many directions of the Worcester Branch, National Metal Trades Association, which has been in existence for the past 13 years.

The Worcester Labor Bureau, operated by the Branch, was the first free Employment Office established in Massachusetts. In the years of its existence it has secured thousands of efficient workers for firms wanting such, and at the same time furnished suitable positions to workmen and workwomen desiring work. The Worcester Labor Bureau has been located at 44 Front Street since its inception, and this has proved a central place for people looking for employment.



Worcester County Court House
Worcester, Mass.

Seven hospitals of various kinds carry on their widespread beneficent work in the city. The City Hospital is the largest. The Act of the Massachusetts Legislature establishing the City Hospital was approved May 23, 1871. The hospital ordinance was passed by the City Council June 26, 1871, and the hospital opened October 23 the same year. The first patient was admitted October 26, 1871. The hospital was first located in the Bigelow Mansion, corner Front and Church Streets, and the number of beds in 1871 was 12.

George Jaques, benefactor, who bought 3½ acres of land for $35,000, which he gave to the city as a site for a hospital, died August 24, 1872, bequeathing $200,000 for a hospital. The hospital was removed to Jaques Homestead, Wellington Street, January 20, 1874, and the number of beds in 1874 was 16.

The hospital was removed to the present site December 8, 1881, and the Training School for nurses established September, 1883. The Gill Memorial and Salisbury Wards were opened 1886 and the Knowles Maternity in June two years later. The Out-Patient Department was begun March 17, 1890, while the Samuel Winslow Surgery was inaugurated July, 1896.

The Male Surgical Building opened October, 1896. The Thayer Memorial Home for Nurses began its work June, 1898, and the heat, light and power plant was completed in 1900.

The City buildings, costing $300,000, were opened in 1904 and the number of buildings comprising the present plant is 20, the value of the buildings $676,904 and the total amount of endowment $267,055.41.

The number of in-patients treated since the opening of the hospital is 75,247. There were 5,619 treated in 1913.

The total expenditures in 1913 were $154,908.57, number of beds 300, while the weekly per capita cost in 1913 was $11.08.

The other hospitals are: Isolation Hospital, founded 1896; Worcester State Hospital, opened 1833; Worcester State Asylum, opened 1877; Memorial Hospital, includes the Washburn Free Dispensary, endowed by the late Ichabod Washburn. The Dispensary was established 1874; the hospital opened 1888; Worcester Hahnemann Hospital, opened 1896; St. Vincent Hospi al, opened 1893.

There are 120 churches and missions in Worcester representing the leading denominations, with 160 clergymen to minister to the spiritual wants of the people, while 366 nurses attend to their physical infirmities. There are 260 doctors and 171 lawyers.

Worcester is the Shire City of Worcester County, and with the single exception of Boston is the largest city in Massachusetts. It has 10 wards with 43 voting precincts.

The city's expenditures for improvements, additions and construction work in all its departments for the year was $5,548,960.11.

The health of Worcester is one of its greatest assets and attractions. It compares very favorably with other cities of the country having a similar population composed of nondescript elements. The rate of death

per 1,000 of the population for 1913 was 15.25. Excluding deaths at both State Insane Hospitals it is 13.91; with non-residents excluded it is 12.87. These non-residents come from outside the city to enter the various hospitals; none are included with a Worcester address.

Some of the Things Worcester Does

Worcester envelopes carry the correspondence of the world.

Worcester textile machinery makes the clothes for the natives of all countries.

Worcester manufactures the machines which do the world's labeling.

Worcester is unique in that it has a machine shop controlled and operated by three women.

Worcester supplies more grinders to the industries of the world than any other city.

Paris sets the styles for gowns; Worcester sets the styles for corsets.

Anything in pressed steel you can get in Worcester.

Worcester is the home of the vacuum cleaner.

Worcester sets the pace for clutches.

Worcester cutlery carves everything.

Worcester is IT in optical goods.

Worcester's shuttles fly hither and yon the world over.

Worcester is the leader in saw manufacturing.

Worcester's fine machine tools are known from coast to coast.

Worcester's auto and cycle chains make travel easier over the roads.

You can pump anything with the pumps made in Worcester County.

No machine shop could run smoothly without Worcester's twist drills.

Worcester's engines run day and night—they work while you sleep.

This is the steel age—the structural work of Worcester firms is par excellence.

Worcester made machines can bring you almost anything by means of the nickel-in-the-slot process.

When shop men want anything in machine tools they naturally turn to Worcester.

Worcester rolls strong on the rolling mills.

If you want to see a battery of boilers, come to Worcester.

For metal ornamental work Worcester is top notch.

There's no crankiness at all about Worcester's crank shaper.

"Worcester made invites trade"—That tells the story about every industry.

"Everything in wire" is a Worcester motto.

Worcester manufacturing plants, 700 of them, make over 300,000 different articles. How's that for variety?

Worcester has approximately 2500 mercantile establishments, employing about 30,000 people.

The business of the Worcester retail merchants aggregates over $60,000,000 per annum. The city has five large department stores, occupying approximately 1,000,000 square feet of space.

The city church property is valued at $3,000,000

Worcester is the centre of a fertile agricultural country. The interests of the farmer, the grower of fruits and vegetables, are being well looked after by the Worcester Agricultural Society, nearly a century old, having been established in 1818; the Worcester County Horticultural Society, organized in 1840; the Massachusetts Fruit Growers Association, the Patrons of Husbandry, the Worcester County Market Gardeners' Association and the Tatnuck Farmers' Club.

In the Worcester County Musical Association this city possesses the oldest music festival given annually, without a break, of any city in the country. It was organized in 1858. The Worcester Festival is an annual function, known throughout the world by musical people for its high class concerts. The leading singers and instrumentalists in the world have appeared in Mechanics Hall at the Worcester Festival.

The Worcester Oratorio Society, organized in 1897, is also favorably known because of the series of concerts it presents annually.

Worcester has a gas producer plant as well as many which consume that commodity.

Worcester has a firm which produces three-quarters of the best finishing machinery for woolens, worsteds, felts, and cotton and other fabrics in the world.

Worcester has the largest wholesale and retail drug store in the state.

Worcester has the largest retail provision and grocery store in Massachusetts.

No home is complete without some of the thousands of different kinds of wire goods made in Worcester.

Every industry uses grinding wheels—and Worcester makes wheels for them all.

Every race in every zone finds exhilaration on Worcester-made skates.

The wool crop of the world is sheared with Worcester-made clippers.

The world's machinery is put together with Worcester-made wrenches.

Monday finds Worcester-made dryers prominent on every landscape.

For years the world has looked to Worcester for dependable firearms.

Worcester has the largest muslin underwear garment factory in the world.

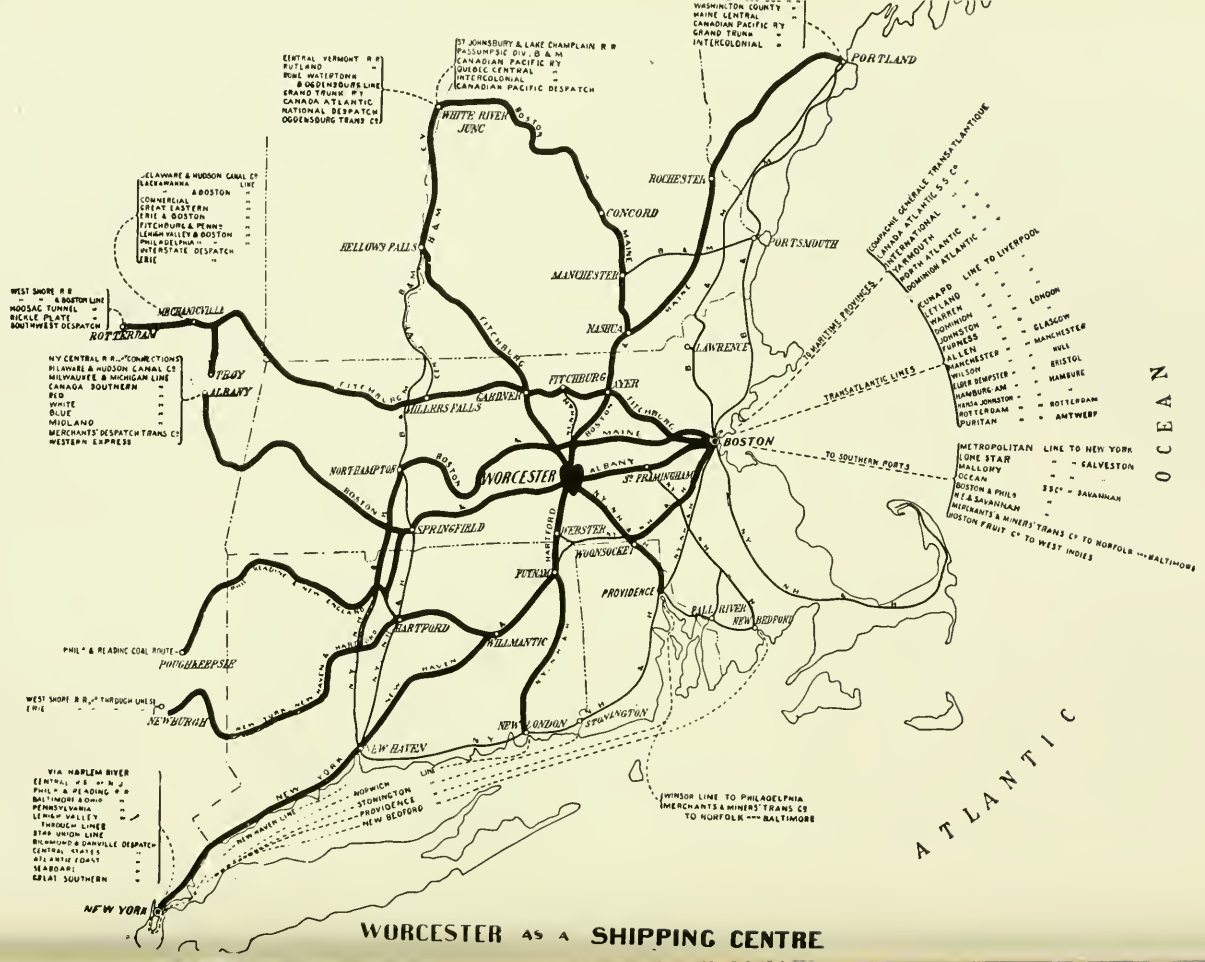
Worcester has the largest factory in the United States for the manufacture of organ materials.

The largest valentine factory in the world is located in Worcester.

Worcester has the largest manufactories in the universe for the manufacture of wire, wire springs and wire novelties.

Worcester's textile machinery output is the largest of any city in the world.

Worcester has the largest and only exclusive plant for the building of wool spinning machinery in the United States.



WORCESTER AS A SHIPPING CENTRE

Worcester turns out 75 per cent. of the best grade of automobile crank shafts of the country.

Worcester produces more envelopes of all sizes and kinds than any other city in the universe.

The Heart of the Commonwealth is responsible for the beauty of figure and poise and attractiveness of the women of the world. It manufactures more corsets and the finest styles of any city in the world. Womanhood owes a great deal to the inventive genius and style of Worcester corset designers.

Worcester had, according to the 1910 census, the largest percentage growth (23.3) in population in Massachusetts for cities of over 100,000 people.

Worcester is the home office of one of the oldest insurance companies in the United States, having insurance in force of about $175,000,000.

Worcester is the home of the two largest and strongest companies in the country providing health and accident benefits for Masons and Odd Fellows.

Worcester has four insurance companies, one life and three mutual fire insurance companies, whose total assets are over $44,000,000 with a total surplus aggregating nearly $4,000,000.

Worcester boasts up-to-date daily newspapers, and the city is known in newspaper life as the nursery of more brilliant, live newspaper men and women, preparing them for metropolitan work, than any other city in the country.

Worcester's educational institutions, from its public schools to its colleges and university, are classed with the best in the country.

Worcester is coming to be recognized as a leading convention city.

Worcester is known as one of the great cities of the country for lodges and orders of all kinds.

Worcester has 80-cent gas.

Worcester has 32,000 telephone subscribers.

Worcester has never lost a penny by a bank failure.

Worcester has 6,000 men employed in the building trades.

Worcester is one big City with an overwhelming number of its industries operated on the Open Shop System.

Worcester is a Port of Entry, the duties received in 1913 being $191,472.46.

Worcester has three Colleges—Clark, Holy Cross and Assumptionist.

Worcester has as cheap electric light as any city in New England.

Worcester has one of the largest wallpaper factories in the United States.

In Worcester was printed the first music from types in this country.

The first English dictionary printed in this country was printed in Worcester.

The first Emigrant Aid Society was organized in this city of emigrants in 1854 by Hon. Eli Thayer.

Worcester was the first city in the United States to buy land for a public park.

Worcester has the largest wholesale and retail wallpaper warehouse in New England.

Worcester has the largest firms in the United States manufacturing paper box machinery.

Worcester can produce in its envelope factories 15,000,000 envelopes per day, and that would only be an ordinary day's work.

Worcester's newest hotel, in which the convention of the National Metal Trades Association meets, the Bancroft, cost $1,250,000, and the delegates can judge for themselves what like it is.

Outside of the American Steel & Wire Co., Worcester has one of the largest steel and wire plants in the United States, not a subsidiary of the United States Steel Corporation.

In automobile and bicycle chains, Worcester has a plant, belonging to the National Metal Trades Association, which turns out 75 per cent. of that product in the United States

Worcester Polytechnic Institute is one of the leading institutions of its kind in the world.

Worcester wrenches have been made for over half a century by one of the members of the National Metal Trades Association, and the product is a million annually.

Worcester has had dull periods when business was not as good as at other times, but it has never experienced a business depression in the sense that other cities have suffered, because of the great variety of its industries.

Worcester Art Museum has an endowment of $3,000,000. It is one of the finest in the country.

Many of the most handsome buildings, public and private, in the country have been erected by Worcester contractors, notably Norcross Brothers and J. W. Bishop Co.

Worcester has a cold storage plant with a capacity of 400 cars, and also produces 8,000 tons of pure ice.

Worcester is the home of the American Antiquarian Society, possessing 130,000 volumes, and 70,000 pamphlets.

Six miles of leather belting are made daily in Worcester, in one of the greatest leather plants of its kind in the world.

Worcester's public library has 190,000 volumes. The Board of Trustees has just opened three branch libraries in various suburbs of the city, the buildings alone costing $25,000 each, Andrew Carnegie giving Worcester $75,000 during the administration of James Logan as mayor for this purpose.

Worcester Trade schools for both boys and girls are monuments to the educational enterprise on industrial lines of wide-awake Worcester citizens.

The Worcester Woman's Clubhouse is one of the most attractive and costly in the country. It was designed by a woman and paid for by women's efforts. It is a credit to Worcester's womanhood.

Worcester's trolley system reaches 35 towns within a radius of a score of miles and touches a population of about half a million people.

Loring Coes, and Mayor Blake, in 1872, were the first men of Worcester to make a balloon ascension. They landed at Pepperell, 45 miles away.

The value of the produced goods in 447 establishments in Worcester for the year 1912 was $86,318,715. The stock and materials used amounted to $48,637,656; the money invested in these 447 establishments was $73,242,657; the amount of wages paid in these establishments for that year was $18,401,919, and the average yearly earnings of the men and women, skilled and unskilled was $604.41.

In the Worcester machine shops and foundries, according to Director Gettemy, of the State Bureau of Statistics, there is invested in capital $13,647,520, and the wages paid in 1912 was $3,730,932, the average yearly earnings of all the employees in these foundries and shops being $659.99.

Worcester's Financial Standing

THE FOLLOWING statement in regard to the debt and borrowing capacity of the city of Worcester, submitted by the City Treasurer Feb. 14, 1914, is interesting as showing the financial standing of the city:

Total funded and bonded debt, Feb. 1, 1914,	$12,824,325.00
Less total Sinking Fund,	5,359,958.62
Net bonded indebtedness,	$7,464,366.38
Present borrowing capacity inside debt limit,	$637,618.96

In figuring the net debt of the city, it is customary among investment security dealers, to exclude Water Debt, on the theory that the Water Department is self-supporting, which is true in the case of Worcester.

Total Water Debt,	$4,955,000.00
Less Water Loan Sinking Fund,	2,467,025.40
Leaving a net Water Debt of	$2,487,974.60
Eliminating this from	7,464,366.38
A balance of	4,976,391.78

is obtained which is the net bonded debt exclusive of water.

Entertainment Houses and Halls

There are eight theatres and pleasure houses in Worcester with a seating capacity of 11,500; there are 50 halls, the largest of which is Mechanics Hall on Main Street with seating capacity of 1,750.

The Court House, Fitchburg, Mass.

Park System

WORCESTER is unusually favored so far as breathing spaces for its people are concerned. It possesses 18 parks with a total acreage of over 1,000. Green Hill Park is the largest, containing 500 acres. The parks have been made most attractive by a Parks Commission which has added to the natural beauty of these public resorts by artistic touches in many ways.

The size of the various parks is as follows:

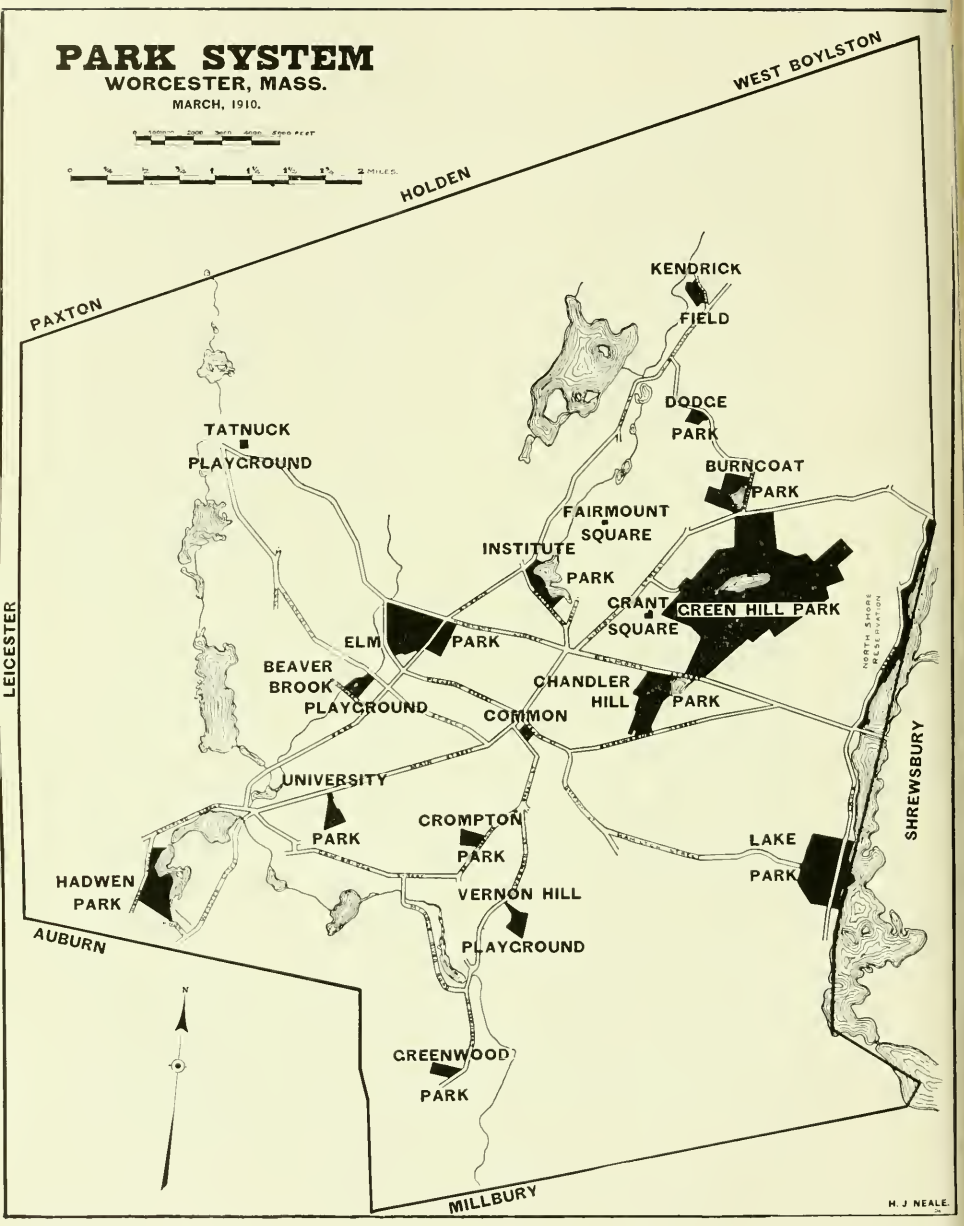
Boynton Park	113	acres
Burncoat Park	41.51	"
Brooks Street Land	1.75	"
Chandler Hill Park	80.34	"
Common	4.8	"
Crompton Park	15.25	"
Dodge Park	13	"
Elm Park	88	"
Fairmount Square,	.95	"
Grant Square	1.55	"
Green Hill Park	500	"
Hadwen Park	50	"
Institute Park	25.44	"
Lake Park	110	"
Middle River Park	8.1	"
North Shore Reservation	5.95	"
Salisbury Park	19.99	"
University Park	14	"
Total	1,092.055	acres

Worcester Post Office

THE PRESENT building on Main Street is the first owned by the Federal Government. The land and building cost $568,365. It was finished in 1896. It requires 111 carriers and 88 clerks to transact the post office work for Worcester's busy people. The gross receipts of the post office for the year ending June 30, 1913, amounted to $529,-456.64.

There are 14 stations in the city in addition to the general Post Office.

Worcester's postmaster is James W. Hunt, who has had 40 years' experience in the government service.


PARK SYSTEM
WORCESTER, MASS.
MARCH, 1910.
WEST BOYLSTON
HOLDEN
PAXTON
LEICESTER
AUBURN
MILLBURY
SHREWSBURY
KENDRICK
FIELD
DODGE
PARK
TATNUCK
PLAYGROUND
BURNCOAT
PARK
FAIRMOUNT
SQUARE
INSTITUTE
PARK
GREEN HILL PARK
GRANT
SQUARE
ELM
PARK
BEAVER
BROOK
PLAYGROUND
CHANDLER
HILL
PARK
COMMON
UNIVERSITY
PARK
CROMPTON
PARK
LAKE
PARK
HADWEN
PARK
VERNON HILL
PLAYGROUND
GREENWOOD
PARK
NORTH SHORE RESERVATION
H. J. NEALE.

Worcester—A City of Hills

WORCESTER is most ideally situated. Soon after it was settled as a town, it began to lengthen its cords and strengthen its stakes, until now it is built on 15 hills, making Jerusalem, with its seven hills, look somewhat small. There's Winter Hill and Wigwam Hill, Bancroft Hill and Hancock Hill, Pakachoag Hill and Newton Hill, hills of the Indians and hills of the Fairies and hills with Bible names and hills just as ancient but with modern nomenclature. The beauty of the hills is not in their names, but in the fact that many grand educational institutions with proud histories and prouder alumni adorn their summit, that they afford a glorious view of the thriving industrial centre which lies at their feet, and that intermingling with their woods and crags and lakes and green sward, is the snug little cottage of the mechanic, the bungalow of the suburbanite or the mansion of the manufacturer or merchant.

From these hilltops the denizens of the west side can catch a glimpse of the glorious sunrises with which Worcester is favored, and the dwellers of the east side may watch the equally vari-colored and beautiful sunsets over the Tatnuck Hills. Rural grandeur beautifies Worcester. On the east at our door is the attractive Lake Quinsigamond, on the west we are guarded by the stately Asnebumskit, to the north rises the majestic tower of Mt. Wachusett, and to the south may be found the famed waters of Chargoggagogmanchauggaggogchaubunagungamaug.

Here is a list of Worcester's hills, their locations and heights:

Bancroft Heights—West of Salisbury Street, near Park Avenue, Height, 720 feet.

Bigelow Hill—Burncoat Street, half mile north of Adams Square, Height, 725 feet.

Chandler Hill—South of Belmont Street, Height, 721 feet.

Green Hill—East of Lincoln Street, terminus of Cushing Street, Height, 777 feet.

Hancock Hill—Between Salisbury and Forest Streets, Height, 780 feet.

Messinger Hill or Fairmount—North of North Street, Height, 620 feet.

Millstone Hill—North of Belmont Street, Height, 760 feet.

Mount Ararat—South of Ararat Street, Height, 780 feet.

Newton Hill—Between Park Avenue, Highland and Pleasant streets, Height, 672 feet.

Oak Hill—Between Bloomingdale Road and Plantation Street, Height, 700 feet.

Pakachoag Hill or Mt. St. James—Near College of the Holy Cross, Height, 693 feet.

Parker Hill—Fowler Street, near City line, Height, 1,000 feet.

Union Hill—Providence Street, Height, 625 feet.

Wigwam Hill—Plantation Street, Height, 560 feet.

Winter Hill—Grove Street, near City line, Height, 980 feet.

Worcester's elevation is 481 feet above tide water.

Mountain House, Mt. Wachusett, One of the Highest Points in Massachusetts

Up Wi' The Hammer, Mate

Up wi' the hammer, mate, labor is sweet,
Rain down the blows while the iron has heat;
Make the sparks scamper, like sleet 'fore the gale,
Flood the old smiddy wi' bright golden hail,
Ilka blow brings the job nearer an en',
Ilka lick brings it to shape, as ye ken;
Strike true and sturdily, toil's a delight,
Hauns may be black, but the siller is white.

Listen, my lad, to the roar of the blast,
Flames from the earth-pit are leaping up fast;
Swing high your hammer, there's siller to win,
Peg away, peg away, never give in.
Kings may rear princes, but we are the men,
Labor's the dowry on which we depend;
Bread tastes the sweetest when worked for fu' sair,
Laugh and be jolly though humble your fare.

Bang! bang! bang!—bang! bang! bang!
Hammers beat time to a cheery Scotch sang;
Swiftly and busily time slips along,
Bang! bang! bang!—Bang! bang! bang!

Worcester—A Manufacturing Centre

IN THE value of manufactures, Worcester, of course, is second in volume and importance only to that of Metropolitan Boston. The year ending December 3, 1912, according to Charles F. Gettemy, director of the State Bureau of Statistics, "marks the highest level ever reached in the history of Massachusetts manufactures," and what is true of the state is also true of the City of Worcester. The value of goods produced in the factories and shops of Worcester for that year, as shown by the returns from 447 establishments, indicate that there is invested in those establishments $73,242,657, that the value of stock and materials used amounted to $48,637,656, that the amount of wages paid in those manufacturing establishments during the year was $18,401,919 and that the average yearly earnings of men and women, skilled and unskilled, were $601.41 The greatest number of wage earners employed was 34,728, while the value of the product manufactured amounted to $86,318,715.

Of the above, so far as foundry and machine shop products alone are concerned, the following figures are exceedingly interesting, as indicating the vastness of these two single industries alone in the Heart of the Commonwealth. In Worcester there are 72 foundry and machine shops. The invested capital is $13,647,520. The value of the stock and materials used amounted to $4,439,819, the amount of wages paid during the year was $3,730,932, the average yearly earnings was $659.99 and the wage earners employed numbered 5,653, while the value of the product was $11,480,800.

In Fitchburg, the leading city in Worcester County outside of Worcester, there are 19 machine shops and foundries, with capital invested amounting to $1,582,997; the value of the stock and the materials used was $523,958, while the amount of wages paid during the year was $514,442. The average yearly earnings was $660.39, and the wage earners employed numbered 779, while the value of the product was $1,617,827.

The two cities of Worcester and Fitchburg combined on machine shops and foundry products make this splendid showing:

Number Establishments	Capital Invested	Value Stock Materials Used	Amount Wages Paid Annually	Average Yearly Earnings	Wage Earners Employed	Value of Product
91	$15,230,497	$4,963,777	$4,245,374	$744.00	6,432	$13,098,627

The average yearly wage for all industries, men and women, skilled and unskilled, for Worcester was $551.36, or $10.60 per week. These figures are based on a running time in Worcester in 1912 of 297 days of work.

Director Gettemy says in his report: "The City of Worcester, second in importance, owes its industrial position to its foundries and machine shops, iron and steel works and wire mills, and there are also extensive manufactures of woolen and worsted goods." This being so, it behooves all employers of labor to join hands with the National Metal Trades Association manufacturers in not only preserving the splendid report which Statistical Director Gettemy gives of the Heart of the Commonwealth, but, if possible, make it better in the years to come.

No country in the world is unacquainted with Worcester's high grade machines.

Some Kinds of Machinery and Specialties Made in Worcester

LATHES, Planers, Drills, Grinders, Shapers, Agricultural Machinery, Automatic Bottling Machinery, Automatic Farm Machinery, Automatic Machines, Automatic Pin Machines, Automatic Printing Machines, Automatic Wire Forming Machines, Band Splitting Machines, Barbed Fencing Machines, Boiler Sheet Drilling Machines, Bolt Cutting Machines, Bonnet Machinery, Boot and Shoe Machinery, Border Trimming Machinery, Bottle Feeding Machines, Bottle Stoppering Machines Box Machinery, Brazing Machinery, Brushing Machinery, Calico Printing Machinery, Card Cutting Machines, Card Feeding Machines, Card Grinding Machines, Card Machines, Carpet Brushing Machinery, Carpet Dusting Machinery, Carpet Shearing Machinery, Circular Saw Machinery, Cordage Machinery, Cotton Machinery, Counter Sinking Machinery, Crown Feeding Machines, Envelope Folding Machines, Envelope Making Machines, Farming Machines, Feeding Machines, Foundry Molding Machines, Grain Cleaning Machines, Gun Barrel Matting Machines, Gun Barrel Polishing Machines, Harvesting Machinery, Hat Machinery, Horse Clipping Machines, Ice Machinery, Labeling Machinery, Laundry Machinery, Loom Keyseating Machinery, Loom Shedding Machines, Mat Shearing Machines, Milling Machines, Mill Machinery, Mitering Machines, Moulding Machines, Mowing Machines, Napping Machines, Needle Feeding Machines, Nut Capping Machines, Packers' Machines, Paper Box Machines, Bending Machines, Board Lining Machines, Covering Machinery, Creasing Machines, Folding Box Machines, Gluing Machines, Gumming Machines, Matchbox Machines, Paper Slitting Machines, Round Cutting Machines, Scoring Machines, Slotting Machines, Rewinding Machines, Topping Machines, Wirecorner Staying Machines, Paper Cutting Machines, Paper Finishing Machines, Pegging Machines, Picking Machinery, Planing Machinery, Plantation Machinery (all kinds), Power Transmission Machinery, Pulley Turning Machinery, Pump Boring Machinery, Punch Making Machinery, Railroad Track Machinery, Razor Stropping Machines, Reaming Machinery, Rolling Mills, Rug Shearing Machines, Sawing Machinery, Shaping

Art Museum School, Worcester, Mass.

Machinery, Slitting Machines, Special Machines, Spindle Drilling Machines, Spraying Machines, Woodworking Machines, Steel Billet Cutting Machines, Steel Ringburring Machines, Tapestry Machines, Tapping Machines, Textile Machinery (all kinds), Thread Machinery, Tire Drilling Machinery, Treeing Machines, Twisting Machinery, Universal Saw Machines, Warp Stock Machinery, Warp Machinery, Wiredrawing Machinery, Sewing Machines, Wool Machinery, Boilers, Dies, Stationary Engines, Handcuffs, Wrenches, Fire Arms, Crankshafts, Drop Forgings, Steam Railroad Cars, Drive Chains and Sprockets, Sheep Shearing Machines, Iron and Steel Construction, Patterns, Sheet Metal Specialties, Wire Specialties, Skates, Pressed Steel Specialties, Vacuum Cleaners and Piano Hardware, Optical Goods, Cutlery, Shuttles, Steam Pumps, Special Machinery, Steam Gas Engines, Railroad Machine Tools, Saws, Files, Irregular Turning Lathes, Boring Machines, Carpets, Vises, Mechanics' Fine Tools, Machinists' Tools, Twist Drills, Street Railway Cars, Broaching Machines, Boring Machines, Cabinet Making, Emery Wheels, Envelopes, Brass Molding, Grinding Wheels, Valentines, Corsets, Wiredrawing, Wire Articles, Ornamental Steel Work, Looms, Automatics, Rolling Mills, Sewing Machines, Presses, Elevators, Chuck Lathes, Magnetic Chucks, Drawing Tables, Woodworking Machinery, Street Sprnklers, Wire Cloth Machinery.

Three-Quarters of a Century of Machine Tool Operation

SEVENTY-EIGHT years ago Salmon W. and John Putnam, two brothers, men well and favorably known throughout New England for their mechanical ability, started a shop in Fitchburg, to do general mill repairs and to "perfect" an engine lathe and gear cutter. For many years they were considered the leaders in their line and the name of Putnam Machine Company has always stood for the best in metal working and railroad machine tools.

The elder brother, John, was a noted violin player and in the realm of jigs and hornpipes was known as a "crackerjack." The younger brother, Salmon, was a fine performer on the clarinet, and, as one of the surviving sons of S. W. Putnam says, "It is doubtless true that in the earlier stages of their business careers, when things in general took on a blue-black tinge and manufacturing conditions rendered the outlook anything but luminous, they sometimes got together in their little 10 x 12 office and with their inspiring music kept the hobgoblins at bay by wafting heavenward their harmonious notes of prayer."

In 1850 or thereabouts Sylvester Wright (locally well known as "Skipper" Wright) was taken into the Putnam Company and was given charge of the lathe department. He remained with the company about 10 years and then formed a company for the manufacture of lathes, known as

President and Treasurer, E. M. Woodward

Woodward & Powell Planer Co., Worcester, Mass.

Vice-President, E. M. Woodward, Jr.

Secretary, John W. Robinson

the Fitchburg Machine Company, and later the Fitchburg Machine Works. This company, after the death of Mr. Wright, was managed by James L. Chapman, his son-in-law, and the product was in the front rank of machine tools. It is now the home of the "Lo-swing" Lathe, so-called. Although Worcester seems to have seen the beginning of the machine tool trade, Fitchburg certainly had the start, through the foresight and the ability of the Putnam brothers.

In the Worcester Almanac and Directory of 1849, there appeared two advertisements:

WOODBURN, LIGHT & CO.

UNION STREET

ENGINE AND HAND LATHES, IRON PLANERS, WILLIAMS IMPROVED DRILLING MACHINES

JOSIAH WOODBURN — JOSEPH F. LIGHT
JOHN WILLIAMS — CHAS. WOOD

also, the following:

SAMUEL FLAGG & CO.

MANUFACTURERS OF
ENGINE LATHES, HAND LATHES, PLANING MACHINES FOR IRON SLIDE RESTS, PERPENDICULAR DRILLS

MERRIFIELD'S BLDG. — UNION STREET

SAMUEL FLAGG — HENRY HOLLAND
LUCIUS W. POND — EPH. BELLOWS, JR.

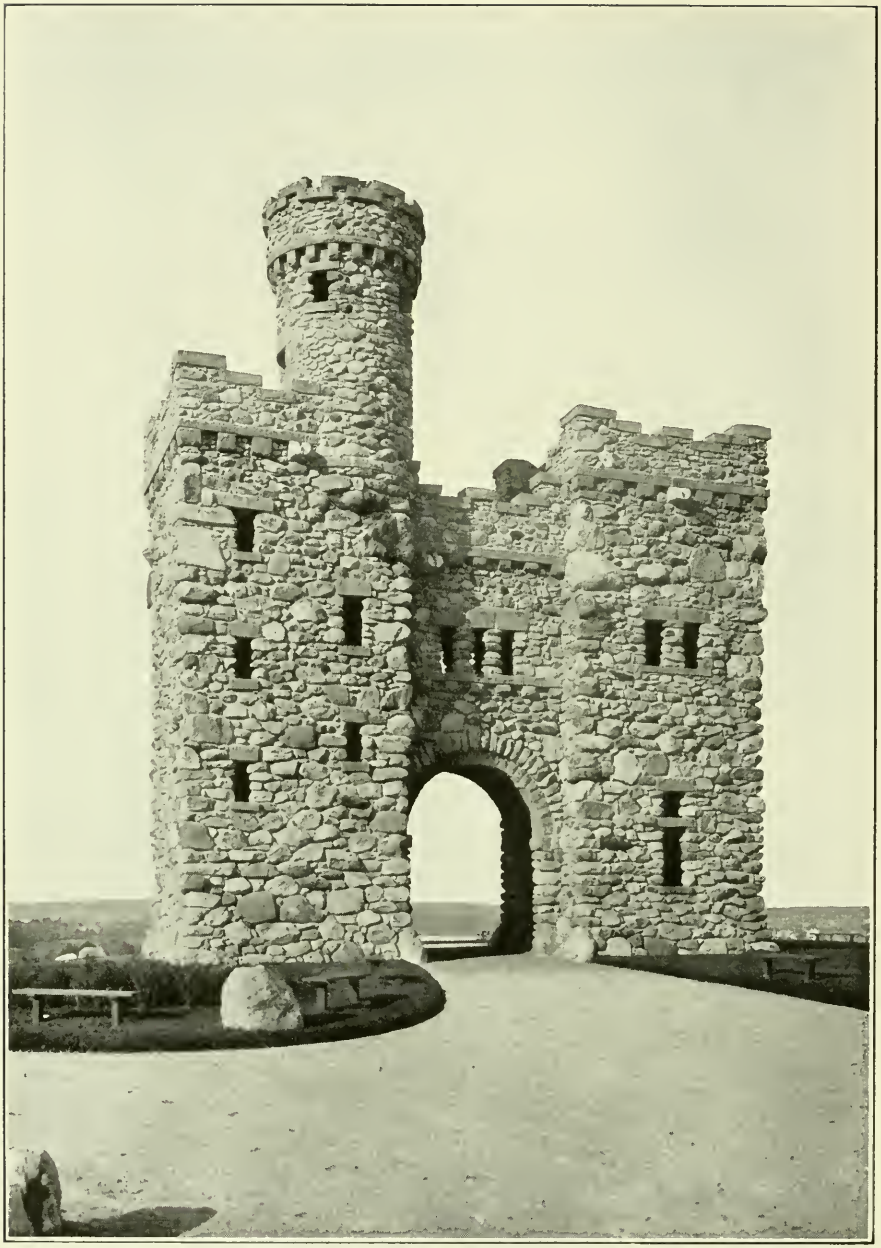
It will be noticed that both these firms did business in Merrifield's Building. This was built by William T. Merrifield in 1835 and rented with power to tenants in any amount of floor space wanted. This building, together with the Stone Building at the South End, called Worcester Junction, built by the Estabrooks and rented the same way, were the two great factors in making Worcester one of the leading mechanical cities of the country.

Many of the great industries in the country had their humble origin in one or the other of these buildings. The Merrifield Building was burned to the ground in 1854 and the tenants lost everything. The Insurance Companies nearly all failed and the tool business was hard hit; but notwithstanding in 1855 the following tool companies were doing business in Worcester.

Wood & Light, Junction Shop; Williams & Rich, Union Street; Samuel Flagg & Co., Central Street; Thayer & Houghton, Washington St.; Shepard Lathe & Co., Junction Shop; C. Whitcomb & Co., Presses and Planers.

It will be interesting to note at this time what became of the graduates from these firms in after years.

The F. E. Reed Company, Prentice Bros. Co., P. Blaisdell Co., from the Wood & Light Co.; Lucius W. Pond, David W. Pond, Pond Machine



Bancroft Tower, Worcester, Mass.

Tool Co., from the Samuel Flagg & Co.; New York Steam Engine Co., from the Thayer & Houghton Co.; Lathe & Morse Tool Co., Draper Machine Tool Co., from the Shepard & Lathe Co.; and Whitcomb Mfg. Co., from the C. Whitcomb & Co.

It was at one of the fairs of the Worcester County Mechanics Association and the Worcester County Agricultural Society, in 1851, that a prize was given to the Wood & Light Company for an engine lathe, the carriage of which was moved by mechanism in an apron that was fastened to the carriage. This was not done by the means of the rack and pinion gear, but by means of a bevel gear nut on the lead screw. All lathes up to this time were known as chain feed lathes operated by a large wooden hand wheel at the head end of the bed. If the lathe was over six feet long, a hand rope running in grooved pulleys was placed on the front side of bed.

This firm was also awarded a prize for an iron planer, the table being driven with a rack and gear instead of a screw and nut which was the common practice.

Some of Worcester's oldest machinists relate with interest that 60 or 70 years ago one would often see some of the workmen in the shops smoking at their work. This seems very strange now in this age of efficiency and shop rules, but not so strange after all, if one will remember that in 1848, when Worcester became a city, Section 41 of the new city ordinances read as follows:

"No person shall smoke any cigar or pipe in any of the roads, highways or streets." So that if a machinist happened to be debarred from smoking in the privacy of his home and could not smoke in the street, the shop seemed to be the only place where he could obtain solid comfort through his old dudeen.

Milled Machine Screws

IN 1866 the Worcester County Mechanics Association, at a fair by the Association in Mechanics Hall, awarded the Worcester firm of Gifford & Bagley, doing business in the Junction Shop, a diploma for an advancement in the mechanic arts by the display of a case of milled machine screws, samples of those made and put on the market by the firm during the year 1866.

A. W. Gifford was the designer of the machinery that enabled the firm to place the screws on the market and started the foundation for an industry that has revolutionized the whole machine trade. All old-time Worcester machinists still tell of their apprentice days in the '60's when the first 12 or 18 months were confined wholly to the making of set and cap screws on an engine lathe. The milled machine screw industry changed to pleasurean apprentice life very materially and produced a better article at a very much reduced cost.

Worcester Labor Bureau, Office of Worcester Branch, N. M. T. A.

Worcester's Valhalla in Mechanics, in Inventions and in Business Management

THE celebrated inventors, men of mechanical genius, business enterprise and integrity of Worcester, well deserve to have their names inscribed in their City's Royal Valhalla. The majority of them have won fame imperishable, and are laid at rest, but others still remain, bringing honor and renown to Worcester's industrial life and history

There are few cities in the United States which could duplicate such a galaxy of Master Minds in the Arts and Crafts, in Business and Commerce, as the Roll of Honor which follows:

Washburn, Moen, Morgan, Goddard, Wright, Marshall, Daniels. Knowles, Crompton, Wyman, Hutchins, Gordon, Wattie, Curtis, Marble, Bassett, Gessner.

Ethan Allen, Johnson, Harrington, Richardson, Brooks, Gifford, Barton, Coes, Coates, Winslow, Whittall, Thomas, Stockbridge, Wood, Light, Pond, Whitcomb, Morse, Thayer, Houghton, Blaisdell, Newton, Reed, Prentice, Back, Luther, Kidder, Woodward. Higgins, Alden, Allen, Jeppson, Norton, Spence, Heald. Bradley, Putnam, Simonds, Brown, Fosdick, Cowdrey, Flather, Starrett, McGregor, Drury, Lapointe, Colvin, Fuller, Beaman, Barr.

Logan, Swift, Buckley, Sherman, Hill, Hobbs, Leland, Stewart, Woodland, Matthews.

Draper, Whitin, Wells, Litchfield, Powell.

Webb, Hildreth, Wheelock, Wesby, Wood, Blanchard, Davis, Heywood, Hammond, Hill, Forehand, Bates, Dexter, Walker, Davis, Graton, Knight, Harrington, Brownell, Sawyer, Rice, Denholm, Brown, MacInnes, Healey, Norcross, Ward, Bishop, Cross, Fiske, Hawes, Bigelow, Bullock, Taylor, Burns, Bassett, Cowan, Durfee, Edwards, George, Viall, Booth, Taft, Brigham.

Worcester Labor Bureau, Office of Worcester Branch, N. M. T. A.

Alphabet of Worcester Branch, N. M. T. A.

A is for Association, all kinds of fine tools,
B is for Boilers and Broachers which wear,
C is for Clippers to cut off your hair;
D is for Drills and Dies, up to the mark,
E is for Engines, aye ready to start;
F is for Firearms, Forgings and Files,
G is for Grinders, we ship them in piles;
H is for Hardware, varied and well,
I is for Iron, we built this hotel;
J is for Jigs, all level and true,
K is for Knives, with one edge or two;
L is for Lathes and Labeling things,
M is for Metal and washer machines;
N is for National, we've got a wide scope,
O is for Optical goods, help watch the cop,
P is for Planers, Pumps and Pressed Steel,
Q is for Quality, our supremest ideal;
R is for Rolling Mills, best made in the states,
S is for Sprockets, Shuttles, Shapers and Skates;
T is for Trades and Textiles supreme,
U is for Universal Boring Machine;
V is for Valves, Vacuum Cleaners and Vises,
W is for Wrenches and Woodworking Devices;
X is for Xenodochy—a stranger—not rooster,
Y is for Yell, and we yell for Worcester,
Z is for Zeal, we've got it to boost her.

WORCESTER, WORCESTER, WORCESTER

Members of Worcester Branch

Officers and Executive Board for Year 1914-15

President, JOHN W. HIGGINS, Worcester Pressed Steel Co., Worcester.
Vice-President, PAUL B. MORGAN, Morgan Construction Co., Worcester.
Secretary, DONALD TULLOCH, 44 Front Street, Worcester.
Treasurer, ARTHUR W. BEAMAN, Stockbridge Machine Co., Worcester

Executive Board.

GEORGE I. ALDEN, Norton Grinding Co., Worcester.
ALBERT E. NEWTON, Reed-Prentice Co., Worcester.
EDWIN C. HARRINGTON, Harrington & Richardson Arms Co., Worcester.
W. H. GATES, Baldwin Chain and Manufacturing Co., Worcester.
FRANK H. ORR, Dupaul-Young Optical Co., Southbridge.
H. B. McDONALD, Simonds Manufacturing Co., Fitchburg.
J H. DRURY, Union Twist Drill Co., Athol
HERBERT L. FLATHER, Flather & Co., Nashua, N. H.
F. F. CUTTING, Lapointe Machine Tool Co., Hudson.

This list will tell Who's Who in the Worcester Branch and what they manufacture

Active

John J. Adams, Boot and Shoe Machinery and Dies—Worcester, Mass.
Baldwin Chain Mfg. Co., Drive Chains and Sprockets—Worcester, Mass.
Coes Wrench Co., Wrenches, Knives—Worcester, Mass.
Curtis & Marble Machine Co., Cotton and Woolen Machinery—Worcester, Mass.
Eastern Bridge & Structural Co., Iron Construction—Worcester, Mass.
Economic Machinery Co., Labeling and Special Machinery—Worcester, Mass.
David Gessner, Cloth Finishing Machinery—Worcester, Mass.
Harrington & Richardson Arms Co., Firearms—Worcester, Mass.
Harwood & Quincy Machine Co., Woodworking Machinery—Worcester, Mass.
Heald Machine Co., Machine Tools and Grinding Machinery—Worcester, Mass.
Hobbs Mfg. Co., Paper Box Machinery, Special Machinery, Nut Locks and Nut Washers—Worcester, Mass.

R. E. Kidder, Patterns, Models and Special Machinery—Worcester, Mass.
Leland Gifford Co., Machine Tools—Worcester, Mass.
B. G. Luther Co., Woodworking Machinery—Worcester, Mass.
Matthews Mfg. Co., Sheet Metal Specialties—Worcester, Mass.
McMahon & Co., Machinists' Tools—Worcester, Mass.
Morgan Construction Co., Rolling Mill and Wire Drawing Machinery—Worcester, Mass.
Norton Grinding Co., Grinding Machinery—Worcester, Mass.
Parker Wire Goods Co., Wire Specialties—Worcester, Mass.
Reed-Prentice Co., Machine Tools—Worcester, Mass.
A. H. Steele Co., Iron Forgings—Worcester, Mass.
Stewart Boiler Works, Steel Boilers—Worcester, Mass.
Stockbridge Machine Co., Crank Shapers—Worcester, Mass.
J. H. Watson, Automobile Repairs—Worcester, Mass.
Whitcomb-Blaisdell Machine Tool Co., Planers and Lathes—Worcester, Mass.
J. E. Windle, Cloth Folding and Finishing Machinery—Worcester, Mass.
Samuel Winslow Skate Mfg. Co., Ice and Roller Skates—Worcester, Mass.
The Wire Goods Co., Wire Hardware—Worcester, Mass.
Woodward & Powell Planer Co., Planers—Worcester, Mass.
Worcester Pressed Steel Co., Pressed Steel Specialties—Worcester, Mass.
Wyman & Gordon Co., Drop, Steam Hammer, Hydraulic and Steel Forgings—Worcester, Mass.
M. S. Wright Co., Vacuum Cleaners and Piano Hardware—Worcester. Mass.
American Optical Co., Optical Goods—Southbridge, Mass.
Dupaul-Young Optical Co., Optical Goods—Southbridge, Mass.
Harrington Cutlery Co., Cutlery—Southbridge, Mass.
Litchfield Shuttle Co., Shuttles—Southbridge, Mass.
Bath Grinder Co., Grinders—Fitchburg, Mass.
Blake Pump & Condenser Co., Steam Pumps—Fitchburg, Mass.
C. H. Cowdrey Machine Works, Special Machinery—Fitchburg, Mass.
Fitchburg Machine Works, Lathe and Planers—Fitchburg, Mass.
Fitchburg Steam Engine Co., Steam Engines—Fitchburg, Mass.
Putnam Machine Co., Railroad Machine Tools—Fitchburg, Mass.
Simonds Mfg. Co., Saws, Files—Fitchburg, Mass.
A. D. Waymoth, Irregular Turning Lathes—Fitchburg, Mass.
Flather & Co., Inc., Machine Tools—Nashua, N. H.
Baxter D. Whitney, Woodworking Machinery—Winchendon, Mass.
Warren Steam Pump Co., Steam Pumps—Warren, Mass.
Charles G. Allen Co., Drills—Barre, Mass.
Leavitt Machine Co., Dexter Valve Reseating Machine—Orange, Mass.
Lapointe Machine Tool Co., Machine Tools—Hudson, Mass.
Universal Boring Machine Co., Boring Machines—Hudson, Mass.
Athol Machine Co., Vises—Athol, Mass.
The L. S. Starrett Co., Machinists' Tools—Athol, Mass.
Union Twist Drill Co., Twist Drills—Athol, Mass.

The Wire Goods Co., Worcester, Mass.

President and Treasurer, Reginald Washburn Secretary, Lewis H. Janes

Associate

Athol Machine Foundry, Iron Molders—Athol, Mass.
Armour's Pattern Shop, Job Patternmaking—Worcester, Mass.
Colvin Foundry, Iron Molders—Worcester, Mass.
Commonwealth Press, Printing—Worcester, Mass.
The Davis Press, Printing—Worcester, Mass.
Denholm & McKay Co., Department Store—Worcester, Mass
Hatch & Barnes Co., Carpenters' Inside Finish—Worcester, Mass.
Norton Company, Grinding Wheels—Worcester, Mass.
Sherman Envelope Co., Envelopes—Worcester, Mass.
Charles R. Stobbs, Printing—Worcester, Mass.
Wells Chemical Bronze Works, Brass Molders—Worcester, Mass.
Whitcomb-Blaisdell Foundry, Iron Molders—Worcester, Mass.

The Industries of Worcester After Fifty Years of City Life

HON. CHARLES G. WASHBURN, in a sketch on the "History of Mechanical Industries," prepared when Worcester was celebrating its 50th Anniversary as a city, in 1889, furnishes much valuable information of the early struggles and successes of the business men and manufacturers of three-quarters of a century ago. In this history Mr. Washburn says.

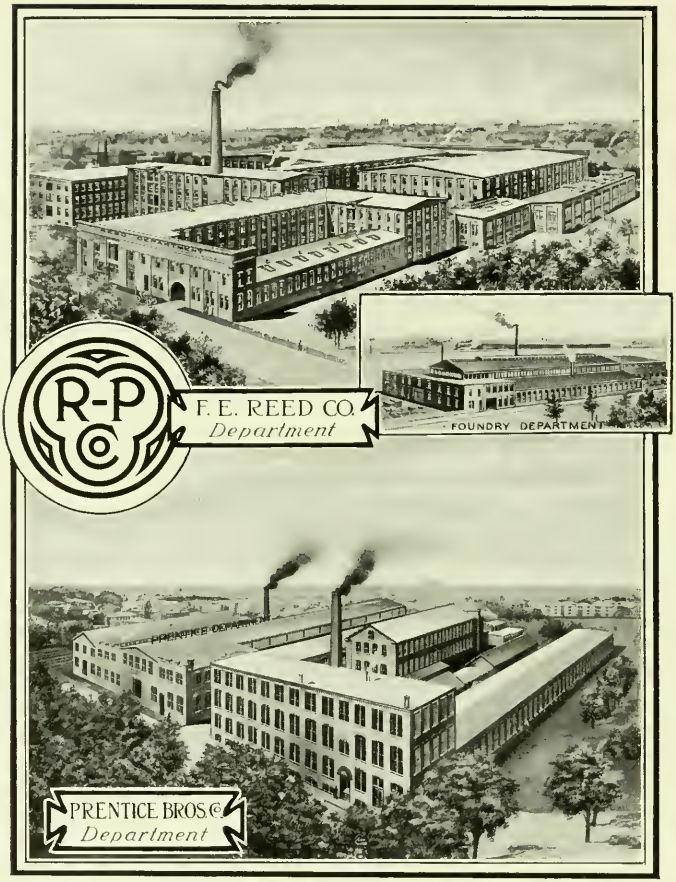
"The history of the mechanical industries of Worcester from 1820 until 1898 is the history of the growth of a village of 3,000 to a city of upwards of 100,000, an increase from the production of the food and clothing necessary for her own inhabitants to an annual product of upwards of $40,000,000 scattered through every state in the Union, and to be found in almost every civilized country on the face of the globe.

"It is a matter of surprise that so large a community could develop where the water power is so limited.

"It is related that the late Judge Merrick once said to Samuel Slater that Worcester never could become a manufacturing town because of the lack of water power, and that Mr. Slater replied: 'Mr. Merrick you may live to see the time when Worcester will need all the water of Mill Brook to provide the steam for her steam engines.' As Judge Merrick lived until 1867, this prophecy was pretty literally fulfilled.

"It is difficult to realize that W. A. Wheeler, who is credited with having had the first steam engine in the State west of Boston, should have discarded it in 1825 and used horsepower until 1840, when he put in another engine. The late W. T. Merrifield at the same time put in an engine of from four to six horsepower. These were probably the first efficient steam engines in town.

"The rapid growth of Worcester as a manufacturing city is most largely due to the following causes: The introduction of steam power,



Reed-Prentice Company
Worcester, Mass.

President, George F. Fuller Vice-President and Gen. Mgr., Albert E. Newton
Treasurer, George Crompton

The building of railroads, The facilities afforded to men with small means to begin business, The character of the people.

"The necessity for means of communication with the seaboard was recognized by our enterprising people at a very early day. The plan of making a navigable waterway to both Boston and Providence was suggested as early as 1796. Work was begun upon the Blackstone Canal in 1822, and was completed in 1828 and on October 7th of that year the first canal boat, the "Lady Carrington," arrived from Providence and moored in the basin of Central Street. The canal was used for twenty years, the last toll having been collected in November, 1848.

"The Boston and Worcester railroad was completed and the first train run to Worcester July 6, 1835 and the road was extended to Springfield in 1839.

"The Norwich & Worcester Railroad was first operated between Worcester and New London, March 9, 1840.

"The Providence and Worcester Railroad began operations October, 1847.

"The Worcester and Nashua Railroad, December 18, 1848, and the Boston, Barre & Gardner, September 4, 1871.

"Prior to 1813 there was no stage or mail route between Worcester and Providence and a stage route begun in 1814 was later abandoned, as it did not pay, but was resumed in 1823. In 1827 there were 18 different lines of stages running from Worcester, and the passengers averaged 100 daily.

"Without facilities for shipping her products at small cost to distant points, Worcester manufactures could never have grown beyond the needs of the rural population. In 1812 it cost $10 per ton per 100 miles to move freight. To-day a hundred pounds of freight can be carried from Worcester to Chicago for no more than it costs to send a trunk across the street.

"The third reason which I have given for the rapid growth of Worcester as a manufacturing city, is the facilities which have been afforded to mechanics to begin business in a small way without incurring the expense incident upon the erection and equipment of a shop, and there are few manufacturing enterprises of Worcester that have not at one time or other occupied room in buildings erected for rent with power to a number of tenants.

"The first of these buildings, the old Court Mills, erected some time prior to 1832, and located at Lincoln Square, was occupied at one time or another by Messrs. Coes, manufacturers of wrenches; Ruggles, Nourse & Mason, makers of agricultural implements; Thomas E. Daniels, maker of planing machines; Samuel Flagg, pioneer maker of machinists' tools in Worcester.

"The Merrifield Buildings, most widely known of all, were built in 1835, and rebuilt after the fire of 1854. In 1859 these were occupied by over 50 firms employing from two to eighty hands each. A building for the same purpose was erected by Doctor Heywood on Central Street about 1846.

The stone shop at the Junction, lately occupied by the Knowles Loom Works, was erected in 1851, and first and last has been occupied by a large number of tenants.

"The manufacturing interests of Worcester, almost without exception, began in a small way and through careful and intelligent management have, some of them, become known the world over.

"About 1819 a number of young mechanics who had been active in reforming the schools and establishing a lyceum and temperance society, made an attempt to form a mechanics association. This failed. But in 1841 a public meeting was held to consider the matter, which resulted in the formation of a successful association, and in the completion in 1857 of Mechanics Hall, so conspicuous in the history of the city.

"The object of the Association was 'The moral, intellectual and social improvement of its members, the perfection of the mechanics arts, and the pecuniary assistance of the needy.'

"Another illustration of the public spirit of the mechanics of Worcester is found in the fact that among the contributors to the fund to provide a suitable location for the Polytechnic Institute were workmen in 20 of the then largest shops and factories.

"A journey to the equator can be taken to-day in less time and with less inconvenience than a journey from Boston to Washington when John Adams was president.

"Correspondence can be conducted to-day by wire with San Francisco with a smaller expenditure of time than by letter with Boston seventy years ago.

"Another of our beneficent institutions, shared in common with all the people of the United States, but which has, in a very large measure stimulated our mechanics, is our national patent system, under which the individual, in return for the benefit bestowed upon the community, can secure to himself, for a limited period, the exclusive right to his inventions.

"A large number of patents have been issued to Worcester mechanics, and this incentive to discover and adapt to practical uses, new methods and new mechanisms has been very potent in keeping our factories at the very highest point of efficiency.

"The wire business was commenced in 1831 by Ichabod Washburn and Benjamin Goddard on a small water privilege in Northville, where they made card wire and wire for screws. The business was in 1835 removed to its present location on Grove Street, and since then has grown to its present large proportions, contributing to the support directly and indirectly of perhaps one-sixth of the population of Worcester, and known the world over. All this has been done with local capital, thrift and enterprise. An interesting illustration of what large results may follow from apparently accidental circumstances, is found in the following incident:

"Sometime during the year 1831, Mr. Washburn, Mr. Goddard and General Nathan Heard, made an arrangement with three brothers, named

Reed, who were manufacturing screws in Providence under a patent they owned, to move their business to Worcester. This they did, bringing the machinery up from Providence on a canal boat, the journey occupying three days. The business was located in the Northville factory of Washburn & Goddard, where the wire was made. Subsequently, in 1836 or 1837, the screw business was moved back to Providence, and became the nucleus of the Eagle now the American Screw Company. Had this business been kept here, it would have been of the greatest value to this city.

"Isaac Goddard was apprenticed to Elijah Burbank at Quinsigamond to learn papermaking. In 1836 he came to Worcester and in company with Mr. Howe began to make paper machinery, at the old red mills on Green Street. They subsequenty moved to the factory on Union Street where the business was conducted under the name of Goddard, Rice & Company, and their successors are now widely known as the Rice, Barton & Fales Machine Company.

"In 1840 the late Samuel Davis happened to meet in Boston, William Crompton, father of the late George Crompton. Mr. Crompton was looking for some one to build his loom, and Mr. Davis recommended Phelps & Bickford of Worcester, who subsequently arranged to manufacture the loom on a royalty. Worcester looms are now known the world over.

"The existence of a foundry in Worcester as early as 1825 led Samuel Flagg to move his machine shop from West Boylston to Worcester in 1839 to save cartage on his castings. He located in Court Mills as lessee to Samuel Davis and made hand and engine lathes.

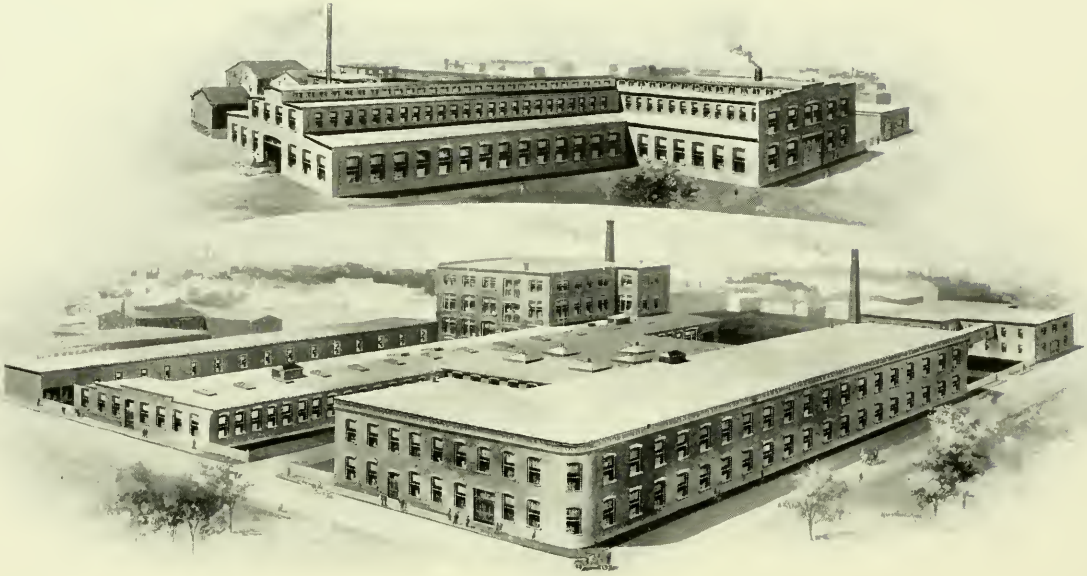
"As an indication of the insufficient equipment of a machine shop in those days, it may be stated that Mr. Flagg had no planer when he commenced business, but did that work by hand, chipping and filing. This was the beginning of the manufacture here of machinists' tools, for which Worcester has been well and widely known.

"The brothers Coes, both born in Worcester, invented and patented a wrench about 1840, which was the basis of their extensive manufacturing interests in New Worcester.

"The manufacture of the Daniels planer in Court Mills by Thomas Daniels, the inventor, in 1839, has led to the manufacture here of wood working machinery.

"Ethan Allen was attracted to Worcester in 1847, and began the manufacture of firearms, which subsequently became an important business, and here invented the first set of machinery ever devised for making metallic cartridges.

"In 1857 the firm of S. C. & S. Winslow ventured to make twenty-five pairs of skates in their machine shop in the Merrifield building. This was the beginning of the Samuel Winslow Skate Manufacturing Company."



Whitcomb-Blaisdell Machine Tool Company
Worcester, Mass.

President and General Manager, Alonzo W. Whitcomb Vice-President and Treasurer, Charles E. Hildreth
Secretary, Ernest T. Clary

No man is born into the world whose work is not born with him. There is always work, and tools to work withal, for those who will; and blessed are the horny hands of toil.

—*James Russell Lowell*

Thomas Blanchard—His Versatility in Invention

A CARTOON, entitled "Men of Progress," was published in Philadelphia, by Munn and Company in 1863, on which are represented the most distinguished American inventors of the 19th century, and among them may be found a good picture of Thomas Blanchard, of Sutton. No one in that galaxy of geniuses more justly deserved the honor. Some of them, such as Morse, McCormick, Howe and Goodyear, have made single inventions which have perhaps attracted more public notice than any *one* of Blanchard's, but it may be questioned whether another inventor can be named in this country or in Europe, during the last century, who has produced so many different labor-saving machines, applicable to such a great variety of uses, and which have contributed so largely to the common necessities, comforts, and economies of life.

This language may seem extravagant, but it must be remembered that not an armory exists in this country or in Great Britain where guns are made, hardly a human being who wears boots or shoes, scarcely a vessel sailing upon the ocean, not a carpet laid down, but owes tribute to the genius of Thomas Blanchard for producing articles cheaper and better. The same may be said of carriage wheels, plows, shovels and various articles of furniture. Latterly his machines have been applied to carving, to architectural design and even to statuary, much to the surprise of artists. Indeed, there seems to be no limit to the uses made of Blanchard's inventions, and it is impossible at present to enumerate them. One can hardly go into a tool shop, a machine shop or a workshop of any kind, wood or iron, where motive power is used, in which he will not find more or less of Blanchard's mechanical motions.

In the "History of the town of Sutton," published nearly 40 years ago, much space is devoted to the inventions of Thomas Blanchard, who was born in Sutton, June 24, 1788. His father, Samuel, was a farmer, and lived on a poor, remote strip of land, where there was absolutely nothing to suggest a mechanical motion. While on the farm, Thomas gave little if any promise of the latent powers within him. There was nothing in his surroundings to excite them. He was misplaced; schools were remote, and he seldom attended, for he was afflicted with a perverse impediment of speech, so that the boys called him "stammering Tom." His prospects were anything but promising. At length, when he arrived at the age of 18 his eldest brother, Stephen, started in West Millbury a tack factory, with horse power, and he promoted his unfortunate brother to the position of heading them in a vise, with a hand hammer, one by one. Once in a mechanic shop his dormant genius began to wake up.

Ere that youth had spent many months heading tacks, one by one, he had designed, constructed and put in operation a machine which would

cut and head them at one motion twice as fast as the ticking of a watch, and better finished than those made by hand. So perfect was it in design and construction, it was continued in use more than twenty years. It is said to be still in existence, and experts who have seen it, say no essential improvement has ever been made upon it.

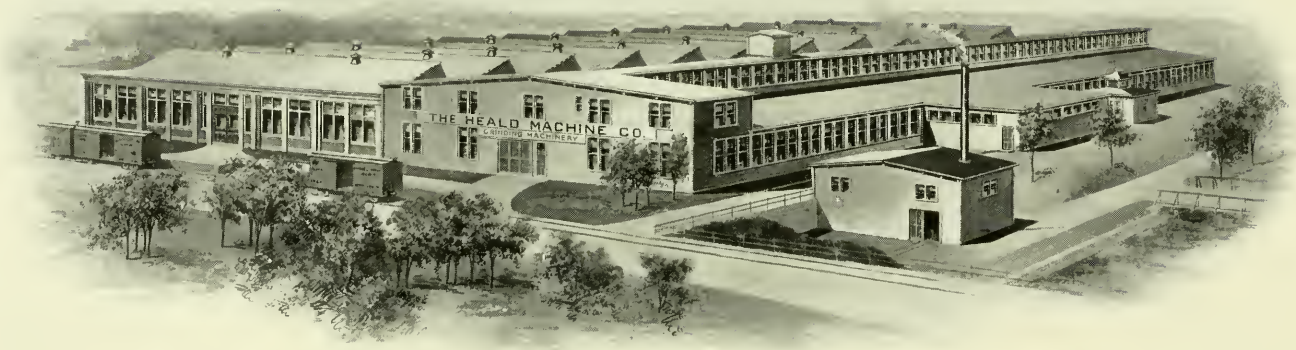
His neighbors could not at first be made to believe he originated it; they thought he must have stolen the design somewhere; but when they found he had hardly been out of the school district, they were constrained to give him the credit.

In Millbury, a few miles distant, and on the Blackstone River, were the armory works of Asa Waters, then largely engaged in manufacturing firearms for the United States. Mr. Waters was making improvements on the English mode of making the gun barrels, which was to weld them by hand and then grind them down before a revolving stone. He first invented a process of welding them by water power under trip hammers in which he succeeded perfectly, patented October 25, 1817. He next invented a machine for turning the barrels, so as to leave the metal of uniform thickness around the calibre (patented December 19, 1818), for in grinding, while one side would often be left too thick, the other would be too thin, and this made them liable to explode.

He succeeded in turning them so far as they were round, but to turn the irregular shape of the butt baffled all his efforts, and so it did the efforts of the most ingenius mechanics in the national armories. At length, having heard of a young man living on Grass Hill, now West Millbury, as having developed some inventive talent, he sent for him to come to his armory. When he came he seemed an utter stranger to all present, uncouth, diffident, had a stammering tongue, and little was expected of him. He was shown the machine and given to understand what was wanted. Glancing his eye over the machine, he very soon suggested an additional, very simple, but wholly original, cam motion, which, upon being applied, was found to relieve the difficulty, and proved a perfect success.

Mr. Waters was delighted. Turning to Thomas he said, "Well, Thomas, I don't know what you won't do next. I should not be surprised if you turned a gun-stock," naming that as the most impossible thing in mechanics he could think of. Thomas hesitated a moment, then stammered out, "We-we-well, I-Ill t-t-try that." Whereupon the workmen, who had gathered round, burst into a loud guffaw at the absurdity of the idea. The germ of the stocking machine lay in that cam motion, and it was then and there, as he afterwards said, that the idea of his world-renowned machine for turning irregular forms first flashed through his mind, although it required some months to elaborate and bring it out.

As soon as he had completed his cam motion at Millbury, he was called to Springfield to adjust similar motions in the United States Armory there. On a return journey, when passing through Brimfield, solitary and alone in his carriage, in deep meditation, he was heard to exclaim with great glee, like Archimedes of old, "I've got it! I've got it!" Two men



Heald Machine Company, Worcester, Mass.

President, Paul B. Morgan

General Manager, Secretary and Treasurer, James N. Heald

who were by the wayside overheard him, and one said to the other "I guess that man is crazy."

This cam motion was introduced into all the armories in the United States, has been in use ever since, and as it saves fully a half dollar on every gun, some estimate may be formed of its value to the country. Blanchard, however, never realized much, if anything from it.

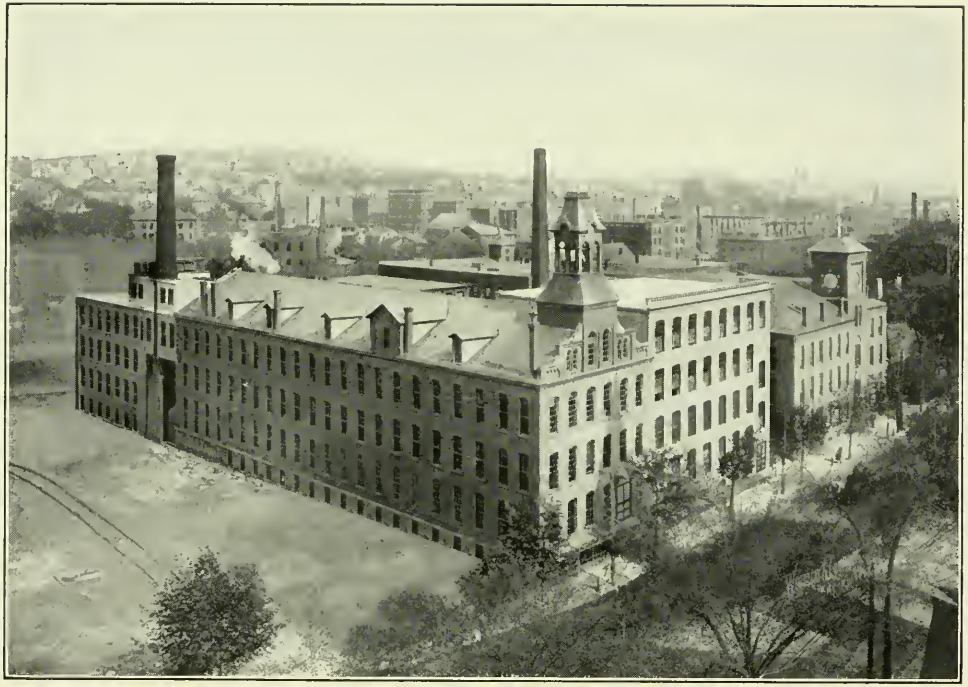
He sold out his tack machine for $5,000, a mere bagatelle, considering its worth, but a vast fortune to him then. He built a workshop, filled it with tools, and kept himself locked in for about two years. At last he emerged and brought to the armory of Asa Waters a miniature model of his stocking machine, and it operated so well that a full sized working machine was decided upon. Blanchard called in the aid of other mechanics, and built his first machine in Millbury. In the meantime the fame of it had reached Washington, and the war department was desirous of having it launched into notice from the national armory at Springfield.

Blanchard, feeling a just pride in this recognition of his great invention, ordered it to be sent there. It was carted by a three-horse team. After it had remained there long enough to build a new one, it was carted back to Millbury, bought by Mr. Waters, and set up in his armory, where it was continued in operation for 25 years. These details are given for the reason that for some years Springfield Armory has assumed the credit of bringing out, and sometimes of originating this great invention, and in all the accounts emanating therefrom, Sutton, Millbury, and Mr. Waters's armory are wholly ignored, and their names are not even mentioned; when in fact Springfield Armory had no more to do in originating that invention than Woolwich, England. That they have made improvements upon it, will not be denied.

Blanchard was called to Springfield Armory with his machine, and given the whole charge of stocking the guns. He proceeded to expand and extend the principle of his machine, first to letting in the barrel, then the mounting, and finally the lock, which the old stockers said could not be done by machinery; but he did do it and did it better than the oldest expert. After he had mastered the whole job by machinery, he left the armory and devoted himself to other projects, with which his mind was teeming.

His machine was soon brought into requisition in making shoe lasts, which were difficult to make, seldom uniform in shape, and quite expensive. They are now made by this machine by the million, made perfectly, rights and lefts, and at trifling cost. It was next applied to tackle blocks, wheel spokes, ox yokes, and so on ad infinitum, from that day to this.

It will thus be seen that this invention has proved to be far more than the invention of a single machine for a single purpose like the revolver, the reaper, the sewing machine, etc., and is largely relied upon in the building of those and other patented machines. It was really the discovery of a new principle in mechanics whereby the machine is made the obedient, faithful servant of man to work out his designs after any given model, be it round or square, crooked or straight, however irregular, and made to reproduce the original shape exactly every time. This perfect uniformity



Hobbs Manufacturing Co., Worcester, Mass.

President, Clarence W. Hobbs Secretary and Treasurer, Harry W. Goddard

of Blanchard's work suggested the idea of having all the parts of the guns made at the armories perfectly uniform, so as to be interchangeable. Hitherto they had been fitted separately, like Swiss watches, and carefully lettered or numbered. This was the method in all workshops, even to the bolts of a carriage or a common bedstead, and woe to him who misplaced one.

The war department, impressed with the importance of having the guns so made that after a battle the broken ones could be readjusted, ordered the Springfield armory to make all the parts interchangeable. At first the mechanics said it was impossible, especially of the lock. The department insisted on the attempt. Finally, after two years' effort, the thing was accomplished. Lettering and numbering were abolished; all the components, even of the lock, were got out in large numbers and thrown together indiscriminately. Thus was inaugurated the "uniformity system" so-called, in the shops—a system which has produced a marked advance along the whole line of mechanic arts, and forms an era, the greatest, probably, since the introduction of the steam engine. It has revolutionized mechanic processes in all workshops; perfected and greatly cheapened mechanic products, and driven from use the old system of numbering.

It is not claimed that the whole credit of the "uniformity system" should be given to Blanchard. Other machines, especially the milling machine, and many skilled mechanics, have contributed largely towards it. But to Blanchard belongs the credit of being its forerunner and suggester, and the system could not now be carried on a day in the armories and many other shops without his motions.

For this great invention, whose worth to this country and Europe can only be computed in millions, Blanchard himself received but a meagre compensation. For the first two terms of his patent he was continually harassed by infringements and law suits, and even in the few years while he was busy in the armory, more than 50 violators had pirated his invention and started up works in various parts of the country for making lasts, spokes, etc. Combined and repeated efforts were made to break down his patent. Eminent counsel were employed, and all Europe was scoured to find some evidence of a similar motion. But in no age or country could a trace be found of a revolving cutter working to a given model, like Blanchard's.

In the lower courts, before juries not comprehending mechanics, he sometimes lost a case; but in the final appeal at Washington he invariably gained his case; so that his claim to originality is now founded upon a rock, which naught can move. Beaten in court, the last makers retreated to the forest of Maine and there pursued their illicit trade. Blanchard at last ferreted them out of their hiding places and they fled over the line into Canada. Here they ran their machines fearlessly, made lasts by the million and exported them to the United States free of duty. He then appealed to Congress, and after much delay got heavy duties imposed on their importation and thus effectually stopped the leak. When the second

Milton Prince Higgins

term of his patent had nearly expired he said he had expended $100,000 in defending his right and had realized to himself little more than "his board and clothes;" that is to say, a fair living. A third term was unprecedented on any patent. Blanchard, knowing that great opposition would be made to another renewal, thought he would resort to a little strategem. He fitted up a machine for turning busts from marble blocks, took it to Washington, obtained plaster casts of the heads of Webster, Clay, Calhoun and others and exhibited the busts in the rotunda of the Capitol. The members were quite astonished when they found that these busts were wrought out by a machine and that they were more exactly like the original than any human hand could make them. It produced a sensation; they all supposed it a new invention; Blanchard said "No, not a new invention, but a new application of an old one of mine from which I have never realized much and I want the patent renewed."

A resolution was introduced into the Senate by Webster to renew it for a term of years—some members wanted it for life, and it was rushed through without delay. Choate, then a member, made the witty remark, "that Blanchard had 'turned the heads' of Congress and gained his point."

Milton Prince Higgins

Father of the Trade School Movement

THIS EDITORIAL in the Worcester Gazette at the time of Mr. Higgins's death, which occurred in Worcester, March 8, 1912, tells accurately and succinctly the leading characteristics of one of Worcester's best known mechanics.

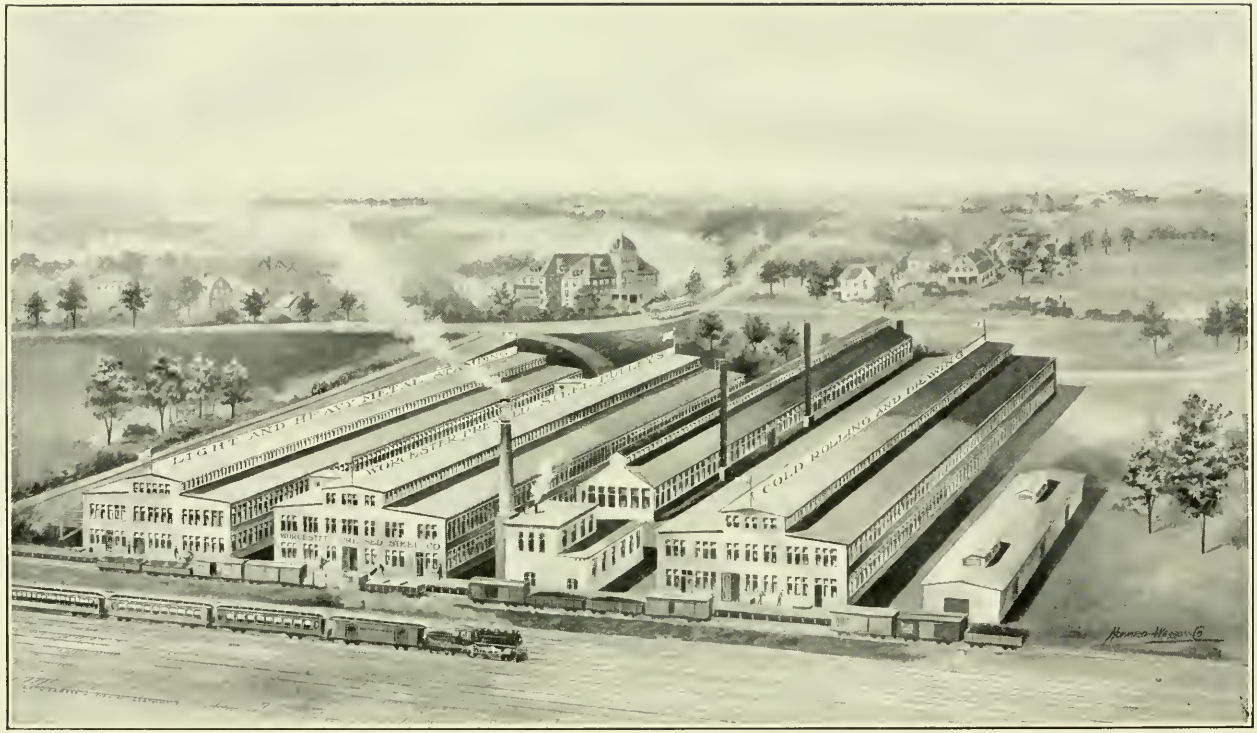
"Only a short time ago we were obliged to record the passing of Charles H. Morgan. Now the asterisk of death must be set against the name of Milton P. Higgins. It would indeed be hard to select two men from the great list of those who have stood for so much in the advancement of Worcester's industrial life, to match the two in mention.

"Worcester will not be alone in lamenting the death of Mr. Higgins. In the industrial world and in the educational industrial world he had won a fame and esteem not to be circumscribed by the limits of any one community or state. Though the fact was never heralded by him and was in general little known, the truth is that in his field of work as a leader in industrial education he had won national fame.

"As a citizen, Worcester owes him an inestimable debt. It is a debt too likely to be overlooked by the unthinking and too likely to be lost sight of by all in these days of rush and progress in the workaday world.

"In Mr. Higgins were found combined two great qualities rarely discovered linked in the same person. He was a great educator and a great business man. He was a theorist and dreamer, man of action and a doer of things.

"His latter sphere was by no means his greatest, but we will first give it comment. Daniel Webster said of Hamilton, 'He touched the dead



Worcester Pressed Steel Co., Worcester, Mass.

President and Treasurer, John W. Higgins Vice-President and Secretary, Arthur P. Higgins

corpse of public credit and it sprang upon its feet.' Mr. Higgins made no pretensions as a statesman, but in the industrial world he had a power as magical as that attributed to Hamilton. Mr. Higgins could lay his hand upon a dead industry and electrify it with life. In his chosen field he could indeed make two spears of grass grow where but one had grown before. As an industrialist, if he was not a genius, he missed that estate but by a hair's breadth.

"Had he confined his efforts solely to business, he must have been accounted one of the city's strong and helpful men. He must have been credited as a man who had done much to add to the city's solid and flourishing industries, and therefore as being a great power in enabling Worcester not only to keep its place as an industrial centre, but to win new fame as an industrial centre at a time when other cities in the East were losing their supremacy to the South and Middle West. He must be remembered as one of our great industrial upbuilders.

"It was in the great field of industrial education, however, that Mr. Higgins did his greatest as well as his noblest work. As superintendent of the Washburn Shops at the Tech, he established his fame through more than a quarter-century of service as a man who had the rare power of turning the theory taught in one quarter of the institution into practical results in the shop. That fame made him sought to organize similar shops as a complement to technical education in other places. The value of his two-score years of association with the Polytechnic Institute can hardly be overestimated either with respect to the impetus which he gave that type of education, or by virtue of that helpful personality of his which did so much to mould the minds and character of the 'boys.'

"Industrial education was the great project of his soul. It was no wonder at all that a man of his training became recognized throughout the nation as a leader of thought on that subject and as one whose counsels were to be taken and followed implicitly. It is no wonder that he brought it about that Worcester should have an independent industrial school. He was the virtual creator of that institution and it must remain a monument to his wisdom, foresight and love of the city where he was so long a respected citizen and where he is sure to be appreciated more and more as time permits his good works to be seen in that perspective which will show their true greatness of mind and greatness of soul."

Mr. Higgins was born Dec. 7, 1842, in Standish, Me. He graduated from Dartmouth, in 1868, with the degree of Bachelor of Science. He then became a draftsman at the Washburn & Moen Wire Works in Worcester, under the late Charles Hill Morgan, with whom he was associated later for many years at the Worcester Polytechnic Institute. It was at this time that Mr.Higgins was selected by Mr. Morgan and other trustees of the Worcester Polytechnic Institute to carry out the unique idea of Ichabod Washburn for a shop that should train the students, and at the same time be a commercial success. Perhaps only those who have tried this can appreciate the magnitude of the success attained by Mr. Higgins in his 28 years as superintendent of the Washburn Shops of the Worcester

Norton Co., Worcester, Mass.

President, George I. Alden Treasurer and General Manager, Chas. L. Allen
Works Manager, George N. Jeppson Superintendent, John Jeppson

Polytechnic Institute. He built up several lines of business there in machinery of his own design, such as machine tools, special grinding apparatus, and the hydraulic elevator of the direct acting plunger type. The marked success of so many of the older graduates of this now well known institute is attributable in no small degree to the atmosphere of commercial industry and thrift that pervaded the Washburn Shops under Mr. Higgins' administration. He was made a trustee of the Institute in 1903, so that he had a practically continuous service at "The Tech" covering over 40 years.

Mr. Higgins is survived by Mrs. Higgins and four children: Aldus C. Higgins, Secretary and Counsel for the Norton Grinding Co.; John W. Higgins, Gen. Manager of the Worcester Pressed Steel Co., and President of the Worcester Branch National Metal Trades Association; Mrs Riley, wife of R. Sanford Riley, a director of the Norton Co., and Mrs. L. I. Prouty, of Brookline.

Plunging Elevators

HYDRAULIC direct acting plunger elevators were first made in Worcester.

John W. Higgins, President and Treasurer of the Worcester Pressed Steel Co., and a member of the National Metal Trades Association, was formerly in this business with his father, the late Milton Prince Higgins, of Worcester.

The elder Higgins worked as a draftsman under the late Charles H. Morgan (then superintendent of the Washburn & Moen Co., now American Steel & Wire Co.), and in 1868 designed the first direct acting hydraulic plunger elevator known.

This fact is attested by old letters in John W. Higgins's possession from authorities who knew the state of the art at the time.

Hydraulic cranes and presses were used before 1868 and the elder Higgins adapted this idea of elevator lifts from seeing a hydraulic cleaning crane.

This type of elevator was first built for one-story freight lifts in the Washburn & Moen plant on Grove St., and proved so successful that the design was developed until finally adapted and built for highspeed passenger elevators for buildings up to 27 stories. Patents were secured on the valve and other mechanisms and the business was developed at the Washburn Shops of the Worcester Polytechnic Institute until 1896 when this department was bought out by a new company (the Plunger Elevator Co.) and moved to Greendale, Worcester. This type of elevator was later built by other New England concerns, but it received its highest development here in Worcester.

About 1902 the Plunger Elevator Co. was sold to the Otis Elevator Co., some of the managers leaving and organizing a competing firm, the Standard Plunger Elevator Co., of Jamesville, Worcester. About 1908 the Otis Elevator Co., moved its plant to Buffalo, where it is now thriving.

George Ira Alden—Inventor, Educator

THE WORCESTER POLYTECHNIC INSTITUTE is indebted for much of its admirable equipment to the inventive genius of George Ira Alden. It was while he was a teacher at the "Worcester County Free Institute of Industrial Science," now Worcester Polytechnic Institute, that the mechanical engineering department developed so rapidly under his leadership.

Mr. Alden is a native of Templeton, having been born in that town April 22, 1843. His early education was obtained in the district and high schools. He then learned a trade and for some years worked in the shop improving his spare time in study, thus fitting himself for the Lawrence Scientific School at Cambridge, from which school he was graduated in 1868.

For several months after his graduation he acted as assistant to Professor Winlock at Harvard College Observatory. He came to Worcester in 1869 to become a teacher at the Tech and was identified with the institution from the beginning. For 27 years he was at the head of the mechanical engineering department. He made the plans for building and equipping the engineering, power and hydraulic laboratories which were built by the Institute in 1895. He was twice made acting principal of the Institute and had an active and leading part in the first quarter century of its history.

During the year 1889, Mr. Alden spent several months in Europe, visiting the Paris Exposition and also the technical and other schools in England and Germany. In 1891 he received the degree of Master of Mechanical Engineering from Cornell University.

Professor Alden severed his connection with the Polytechnic Institute in July, 1896, and assisted in organizing the Plunger Elevator Company. He is president of the Norton Company and Norton Grinding Company, besides holding many other high honorary offices in Worcester, where he is regarded as one of its most respected citizens. Naturally, he is keenly interested in educational matters, particularly on trade lines, to assist young men and women to be good citizens.

Mr. Alden is president of the Employers Association of Worcester County.

The Crompton Loom

THE ORIGINAL CROMPTON LOOM was not invented by George Crompton, but by his father, William Crompton. It was made about 1836 and patented in this country in 1837.

William Crompton's first loom was a cotton loom. It was the first power loom on which fancy cloth could be woven, that is, it is the first power loom, and it is believed, the first machine which used what is now known as a pattern chain—a chain made up of strips of wood, or small bars of metal, on which in the case of wood were inserted pegs, or in the case of metal bars round rollers or balls as they are somewhat unappropriately

called. A pattern can be made up on this chain which, when placed upon the loom, will cause the proper harnesses, which control the lateral threads of the cloth, to rise and fall at the proper time in order to effect the desired weave.

Before this loom was invented the harnesses were controlled, as indeed they are now sometimes controlled, by cams. The advantage of the pattern chain over the cam lies in the fact that it can be changed at will without much trouble, and makes it possible to weave a much more complicated pattern than can be woven by cams.

The original Crompton loom was, as has been said, a cotton loom. In 1840, at the request of Samuel Lawrence, then treasurer of the Middlesex Mills at Lowell, William Crompton, the grandfather of George Crompton, of Worcester, altered this loom over into a woolen loom in order that they might be able to imitate a complicated pattern originally manufactured in Sedan, France. He successfully changed these looms, and during that year, for the first time, a piece of fancy cassimere was woven by power at the Middlesex Mills. Mr. Crompton has a piece of this cloth in his office.

In a letter written in 1874 to George Crompton (father of the present George Crompton, treasurer of the Reed-Prentice Co.), Samuel Lawrence said, "Not a yard of fancy woolens had ever been woven by power loom in any country until done by your father at the Middlesex Mills in Lowell in 1840." The Middlesex Mills made a great deal of money by being the first mill to have these fancy looms and declared very large dividends. The looms consequently became very popular and William Crompton made arrangements with Phelps & Bickford, of Worcester, to manufacture them under a royalty.

After the patent ran out, William's son, George, obtained a renewal of it and began in the Merrifield Buildings, in Worcester, in 1851, the manufacture of looms himself, having as a partner Merrill E. Furbush.

A few years later, Mr. Furbush went to Philadelphia and George Crompton continued the manufacture of looms in Worcester. The Crompton Loom Works was thus the original fancy loom works probably of the whole world.

All fancy power looms use the chain invented by William Crompton, and thus in a sense all fancy power looms are Crompton looms, though of course great improvements and changes have taken place in the last 75 years.

Improvements were made from the very first in the Crompton loom, but no improvement before or since has equalled that made by George Crompton in 1857. In that year Mr. Crompton brought out his "New Broad High Speed Loom." Before this the looms were narrow, that is, of about 48 inches reed space, and they ran at the rate of about 45 picks per minute. The new loom, nearly double in width, ran at about 85 picks per minute, hence the production was nearly quadrupled.

Since the early days of the company, when the loom business was confined principally to a few types of looms, it has gone to manufacturing

Curtis & Marble Machine Co., Worcester, Mass.

President, Edwin H. Marble
Treasurer, Charles F. Marble

Vice-President and Secretary, William C. Marble
Superintendent, Albert C. Marble

every type of loom for weaving, so that it is not too much to claim that for fancy weaving machinery this company is the largest concern in the world, making practically a loom for every type of fabric that is woven.

It is impossible to state the total product for a year. This is an unknown quantity, for the reason that the company makes looms for woolen, cotton, silk, dress goods, velvets, plushes, tire duck, cotton duck, ribbons, tapes and every conceivable kind of a fabric, and no two years are ever alike; one year the demand may be running very heavy on woolen, and lighter in the other departments, and the next year will change in some way, according to the condition of trade or fashion, etc. It is the great variety that the company has to depend upon. It makes everything from a plain cotton loom to box looms for woolen felts that are 480" reed space, and also some heavy cotton felt looms that weigh over 20 tons to a loom, thus covering a very large variety.

The foundation of this great business was laid by Messrs. George Crompton and Lucius J. Knowles in the early 50's, the former having located in Worcester in 1851, in copartnership with Merrill A. Furbush for the manufacture of looms under the renewal of a patent granted his father in 1837; and the latter, having been granted his first loom patent in 1856, entered into copartnership with his brother, Francis B. Knowles, in the town of Warren, removing later to Worcester.

The constantly increasing demand for textile fabrics of every variety in every line of commerce and of trade, and the consequent extension of the textile throughout the entire country, have contributed very materially for a rapidly increasing demand for weaving machinery to the extent that the growth of the loom-building industry has been truly phenomenal, especially when it is considered that it was not until the year 1840 that the first fancy woolen cassimeres were woven by power in this country, if not in the world, this being accomplished on the Crompton loom in the Middlesex Mills in Lowell.

In 1859 the partnership of Furbush & Crompton was dissolved, and Mr. Crompton continued in business alone until his death, in 1886, rapidly developing it from its small beginning in the old "Red Mill" on Green Street.

From 1866 to 1879 the firm of L. J. Knowles & Brother, the name given to the copartnership existing between L. J. Knowles and Francis B. Knowles, was located at Allen Court, when its quarters became so much outgrown that it was necessary to remove the business to the "Junction Shop," so-called, on Jackson Street, where it remained until its continued expansion compelled another change. Upon the death of Mr. Crompton, in 1886, his business was incorporated under the name of Crompton Loom Works, with his widow, Mrs. M. C. Crompton, as its president, she being succeeded at her death, in 1895, by her eldest son, Charles Crompton.

L. J. Knowles died in 1884, and the following year the business was incorporated under the name of the Knowles Loom Works, with Francis B. Knowles as its president, and upon his death, in 1890, C. Henry Hutchins was elected as his successor to the presidency.

During the many years of the active history of these two partnerships and corporations as independent industries, many valuable alterations and additions were naturally made to the original machines which were the foundations of the business at the beginning.

Improvements have not been confined to any special kind of loom, but to every department of fancy weaving, to the end that looms are at present constructed at these works to weave woolen and worsted goods from the heaviest felts to the lightest of dress fabrics; in cotton from the heaviest duck for sail cloths to the most delicate and flimsy material for ladies' wear; in carpets from the most elegant Axminsters and Wiltons woven by power to the most ordinary carpet made from rags, and from the art square to cover a whole room to a mat for the door; and in silk goods from the widest for dresses to the narrowest for ribbons. Looms are also made to weave iron wire netting, paper matting, glass cloths for ornamental purposes, horsehair for furniture covering and for every material capable of being woven.

Previous to the death of L. J. Knowles, negotiations were entered into for the Knowles "Open-Shed Fancy Loom" into the European market, and arrangements were completed with Messrs. Hutchinson, Hollingworth & Company, of Dobcross, England, large builders of machinery, whereby they should build this loom. The wisdom of this move is evidenced by the fact that over 15,000 woolen and worsted looms built upon this principle have been introduced into the leading mills of England and the continent.

In 1893 the company acquired the business of the George W. Stafford Mfg. Company, of Providence, since which time it has been carried on as an independent branch.

In 1897 the consolidation took place of these two great establishments, with a combined capitalization of $3,000,000, under the name of the Crompton & Knowles Loom Works, a most important event not only in the history of the two corporations, but in the manufacturing and financial life of the city as well.

Norton Company—Pioneers in Emery Wheel Work in the World

THE FOUNDING of the Norton Grinding Wheel business dates back to about 1873, when the first vitrified emery wheel was made in the pottery of F. B. Norton, then located on Water Street in Worcester. The early wheels were experimental, and it was not until 1879 that F. B. Norton started to manufacture them commercially in connection with his pottery business.

June 20th, 1885, soon after Mr. Norton's death, the grinding wheel business was incorporated as the Norton Emery Wheel Company.

In 1906 the name of the organization was changed from Norton Emery Wheel Co. to Norton Company. The present officials are: George I. Alden, president; Charles L. Allen, treasurer and general manager;

Aldus C. Higgins, secretary and general counsel; George N. Jeppson, works manager.

Norton Company has shown remarkable growth since its incorporation in 1885, and for this growth the spirit of scientific research has been largely responsible. Long before artificial abrasives had attained their present standing, the Norton Company had foreseen that natural minerals, such as corundum and emery, were not wholly successful as abrasives, due to their lack of uniformity. Then, too, none of the natural abrasives were wholly successful upon steel and the rough alloys which the steel plants were beginning to produce. In the search for a good artificial abrasive the officials of the company found a crude artificial corundum, then being made in a small experimental laboratory in New Jersey, and bought the patent rights to this product now known as alundum.

The period from 1901 to 1906 was spent in the difficult task of making alundum a commercial possibility. Thousands of experiments were required to overcome the many difficulties and obstacles. In 1906 alundum completely supplanted emery in the manufacture of Norton grinding wheels, and from that time on the Norton product increased rapidly in volume and obtained world-wide recognition.

Research work continued unceasingly, as exemplified in 1910 when the Norton Company began the manufacture of crystolon, a perfected carbide of silicon, for use upon materials of low tensile strength.

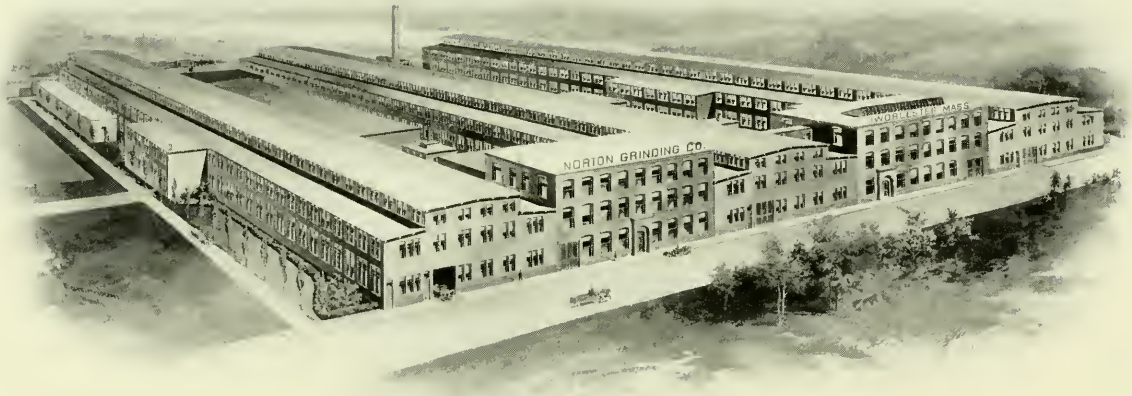
The company has been active in developing other products in which abrasive materials formed an important part. Perhaps the most interesting of these is the Norton alundum and crystolon refractories and laboratory ware. Due to their peculiar properties, alundum and crystolon are particularly adapted to this line of work, and these refractories are in many instances replacing such expensive materials as platinum.

Norton Company is well known because of certain features, such as its Health and Sanitation Department and its Safety Engineering work. The work of the Norton Hospital has been described at length in many publications. In 1912 Norton Company was awarded the Scientific American gold medal for the development of safety features in the grinding field.

Norton Grinding Company—Made Grinding an Art

THE MACHINE BUSINESS conducted by the Norton Emery Wheel Co., in conjunction with the grinding wheel business, assumed such proportions that in 1900 it was deemed necessary to establish an independent enterprise for manufacturing grinding machinery.

The Norton Grinding Company was incorporated Feb. 27, 1900. With the organization of the new company came the introduction of Norton machines for cylindrical grinding, the invention of Chas. H. Norton, who at that time first became identified with the manufacture of Norton products.



Norton Grinding Co., Worcester, Mass.

President and General Manager, George I. Alden Treasurer, Charles L. Allen
Secretary and General Counsel, Aldus C. Higgins

The present officials and directors of Norton Grinding Company are: Geo. I. Alden, president and general manager; Chas. L. Allen, treasurer; Aldus C. Higgins, secretary and general counsel; John Jeppson, Geo. N. Jeppson, R. Sanford Riley.

The progress of Norton Grinding Company since its incorporation has been marked by some notable developments.

Since 1900 the influence of Norton Grinding Company, through the medium of grinding, has reduced the cost of production of such cylindrical work as requires any degree of accuracy or finish from 25 to 50%. It has improved grinding methods and machinery, so that to-day it costs less to turn and grind than it formerly did to turn alone—this in contrast to the period previous to 1900 when it cost more to grind than to turn and file.

Norton Grinding Company was the first to build a grinding machine which would remove as much as three cubic inches per minute of steel or chilled iron. Previous to the introduction of Norton cylindrical grinding machine, there was no such thing as grinding pieces 2 to 6" long without traversing the wheel; consequently, there was no recognition of this method of obtaining a high rate of production with a grinding wheel.

It was the first to discover that perfectly round or perfectly straight work could be ground on rigid, steady rests regardless of contour of work before grinding. In fact, Norton Grinding Company was the first to evolve a system of rigid steady rests and a system of grinding to utilize that discovery.

The first machine for forming cams from the solid stock without milling or other tool work was developed by the Norton Grinding Company, as was the first fully automatic cylindrical grinding machine for chuck work.

It was the first to build a machine to grind the entire pin and fillet on crankshafts simultaneously, with a wheel face the entire length of the pin.

Previous to the development of the Norton surface grinding machine, in 1913, there was no such thing as grinding perfectly flat surfaces. This is accomplished by the Norton Grinding Company in a machine using a wheel as wide as the work and without cross feeding, as distinct from the method depending upon a narrow wheel slowly feeding across the surface.

One of Norton Grinding Company's most recent developments is a roll grinding machine weighing in excess of 50 tons to grind large rolls used in the steel plate industry. Development of such huge machines has been made possible by Norton Grinding Company by applying the truths and possibilities of grinding, and daring to make the large outlay which was necessary to prove the value of these large machines.

It was the first to create a practical, simple machine for indicating errors in running balance by which an ordinary workman could secure dynamic balance without the use of mathematics.

It developed the pendulameter for magnifying errors of parallelism in the ways of such machines as planers and grinding machines. The

Stockbridge Machine Co., Worcester, Mass.

President, Radford Stockbridge Secretary and Treasurer, A. W. Beaman

pendulameter magnifies such errors 500 times, enabling machine builders to obtain a high degree of accuracy.

Worcester's Biggest Industry—Wire

WHAT IS NOW the American Steel & Wire Co. unquestionably is one of the pioneers in wire making. But who invented the process? there's the rub. All efforts on the part of those responsible for inflicting this volume on a long-suffering public have been unavailing in the matter of discovering the discoverer. It might have been the Versatile Melchisedec, or the Mariner Noah, or the aged Methuselah, or Vulcan himself. Anyhow, the secret originated in the fertile brain of some genius in the Dark Ages and we are compelled to publish the accompanying correspondence to give the public the full idea that we endeavored to unearth the mystery and that a friend named Warren of the American Steel & Wire Co., with native art and humor, came to the rescue with a characteristic reply in response to desire for information: This is the correspondence:

February 13, 1914.

Mr. J. B. Moss,

American Steel & Wire Co.,
Worcester, Mass.

Dear Sir:—

In the absence, I understand, of Mr. C. S. Marshall, will you be kind enough to give us some information in regard to who was the inventor of the wire drawing process, his full name and where he first worked.

I am gathering some information about Worcester industries in preparation for the Annual Convention of the National Metal Trades Association to be held in The Bancroft next April.

What part did Mr. Washburn, Mr. Moen or any others connected with the firm play in regard to the formation of the American Steel & Wire Co.? How many employees do you have on your payroll in the three mills in Worcester during good times, day and night shifts?

Has it ever been computed how many miles of wire and cable of all kinds can be turned out in the mills in a year, operated at full blast?

Any information you can give that will be of interest to manufacturers will be appreciated.

Also please state the approximate value of the buildings and land at your plants.

Thanking you in anticipation, I am,

Yours very truly,

DONALD TULLOCH,
Secretary.

March 5, 1914.

Mr. Donald Tulloch, Secretary,
National Metal Trades Association,
44 Front St., Room 36,
Worcester, Mass.

Dear Sir:—

We are sending you herewith, by messenger, a memorandum compiled by Mr. Warren regarding information requested in your letter of February 13th. You will note this memorandum does not mention anything regarding value of land and buildings. The assessors of the City of Worcester use as a value of land, buildings, machinery and personal the sum of approximately $5,000,000 on which our tax assessments are based and we would consider this a fair valuation.

Yours truly,
C. J. MOSS,
Assistant Manager.

WAB-EMB

Worcester, Mass., Feb. 27, 1914.

Mr. J. B. Moss,
Assistant Manager.

Dear Sir:—

Replying to the request for historic data concerning the Wire Industry, dated the 13th inst., and addressed to you by Mr. Donald Tulloch, Secretary, Worcester branch, National Metal Trades Association.

The following statement, the substance of which is already more or less familiar to you, I would submit as partially covering the points raised by Mr. Tulloch.

The first question, asking "information in regard to who was the inventor of the wire drawing process, his full name, and where he first worked," is a very natural question for any one to ask, as one might ask "who invented the sewing machine." In the latter case, it is easy to give a definite and satisfying reply. When, however, we attempt to answer the same question as applied to wire drawing, we suddenly find ourselves in deep water.

At first, we try to touch bottom with a pole. We go back to the beginning of wire drawing in Worcester (1831), and earlier, about (1820), in Spencer; still earlier (1816) at the Falls of Schuylkill, Pa. The pole is too short. Then we begin to heave the lead. Presently, we have bottom. Upon examining the lead, we find the date to be 1780; the place, Birmingham, England; and the operation is the drawing of wire by means of a horse turning a capstan. The interest deepens. Heave the lead again to make sure. Slightly deeper this time. Date, 1745; place, London, England; wire being drawn by hand. The next two or three throws develop very little change. Then there is brought up the date 1666; the place is Lynn, Massachusetts, and there is a name, Nathaniel Robbinson, "wyer drawer."

Back again to England. Date, 1570; place, Tintern, in Monmouthshire; a water driven wire factory, established here by Englishmen. Preceding this, it is recorded that in 1565, Queen Elizabeth induced certain Germans to establish a wire factory at Holywell in Wales.

It is clear that the Germans must previously have been somewhat skilled in wire manufacture, so we continue sounding. The lead presently brings up the date 1350, and the information that about the middle of the fourteenth century, wire was being made in Nurnberg, in Bavaria, and in Altena, in Westphalia.

Surely the bottom has now been reached. A few more throws and the search is over, when—away goes the lead,—down, down, down, reeling off the generations with the same unconcern exhibited by a Twentieth Century Limited in gliding swiftly past country towns of the middle west When the lead ceases pulling on the line, we haul it up, wondering what record it will reveal. This time, it brings up a piece of wire, together with the record that the wire was made by artisans of Nineveh, about the year 800 B. C. We have jumped a gap of more than two thousand years. In the previous soundings, the lead, instead of reaching the bottom, had merely found lodgment on some of the ledges or high places nearer the surface. But have we even yet reached the beginning of wire manufacture?

Continuing to heave the lead, we are further rewarded by having it take another drop, rushing downwards across a second wide gap covering several centuries before finally reaching bottom. The date this time is indistinct, but under a glass it appears to be 1500 B. C. There also adheres to the bottom of the lead, a scrap of Hebrew manuscript which proves to be a portion of the 39th chapter of Exodus, from which we learn that the Israelites under Moses, wandering in the wilderness of Sinai, in search of the Promised Land, included in their working equipment, facilities for making wire.

Now we are appreciably nearer to the dawn of civilization, and repeated casting of our sounding lead fails to reveal any earlier trace of the manufacture of wire.

Peering into the dim and misty past in our eagerness for details, we obtain a glimpse here and there, of a man working at a rude forge in which a lump of metal is being slowly heated. Taking it from the fire to an anvil, he hammers the piece of soft metal flat and very thin, working over it until both surfaces are quite smooth. Then, with hammer and chisel, he skillfully cuts the thin sheet of metal into narrow strips. By means of further hammering, these strips are elongated and rounded, and in the finished product we recognize Wire *in its earliest known form, made by the earliest known process.*

Perhaps it will be as well if we do not spend much time trying to ascertain the full name of the inventor and the place where he first worked.

Briefly, the art of wire drawing is not a modern invention. When, in the year 1831, Ichabod Washburn and Benjamin Goddard began to make iron wire in their little factory at Northville, about two miles from Worcester City Hall, their product could not be classed as a novelty. Due credit

Baldwin Chain & Manufacturing Co., Worcester, Mass.

President, J. H. Kendall

Vice-President and General Manager, W. F. Cole

Secretary and Treasurer, William H. Gates

should be accorded them, however, for the keenness of foresight and enterprise which led them to engage in an industry which, surpassed by none, has since developed to an extent nothing short of marvelous.

Although neither of these typical sons of New England invented wire-drawing, they, with their chosen associates and immediate successors, played leading parts in the subsequent phenomenal growth of wire manufacture in America. A consideration, however brief, of the many and various epoch-making steps in that evolution would render this paper burdensome and less suited to its present purpose.

The negotiations leading to the purchase of the Washburn & Moen properties and business by the American Steel & Wire Company, in the year 1899, were conducted on the part of the Washburn & Moen interests, by Messrs. William E. Rice, President, and Philip W. Moen, General Manager. Mr. Moen was at the time of the transfer, elected a Vice-President of the American Steel & Wire Company.

During the fifteen years which have elapsed since the consolidation, many new uses for wire have helped to swell the naturally increasing demand for the products of this industry.

The American Steel & Wire Company, through the broad policy of an ably efficient and alert management, aided by an army of skilled and loyal workers, has kept ever in the front rank with respect to the development of new lines of products and to improvements in manufacturing and business practice.

Some idea of the volume of the local business may be obtained from the fact that under normal conditions, the employees in the three Worcester plants of the American Steel & Wire Company number approximately six thousand, varying two hundred or three hundred above or below this figure. Also, the maximum yearly output of the Worcester plants, based on the actual record for one busy month, is upwards of two hundred thousand tons.

Yours truly,

A. G. WARREN.

AGW-S

Another authority, Harry W. Goddard of the Spencer Wire Company, informs us that according to history the first fine wire in the United States was drawn in Spencer, 12 miles from Worcester, about 1812, by Windsor Hatch and Charles Watson. This was drawn by hand from two tubs in the kitchen of a farm house. In 1820 there was a small industry in Spencer conducted by Elliot Prouty and his brother, Russell Prouty. Eli Hatch was also drawing wire in Spencer in 1830.

In 1831 Ichabod Washburn started wire drawing in Worcester, from which has developed the biggest mills for the manufacture of wire, belonging to the American Steel & Wire Company, in the world.

Nothing definite is known as to who first planned the present scheme of wire drawing. Wire is mentioned in the Bible and it has always, as far as anybody knows, been drawn through a hole in a plate, just the same

Matthews Manufacturing Co., Worcester, Mass.

President, F. E. Reed Vice-President, F. S. Morton Treasurer, A. T. Matthews

Assistant Treasurer, Clara L. Matthews Secretary, Frederick Lines

as it is to-day. Of course details have greatly improved but the principle is just the same.

The last statistics in 1910 indicating how much wire was manufactured in the United States says it amounted to 2,514,000 tons, the greater bulk of which was manufactured in Worcester.

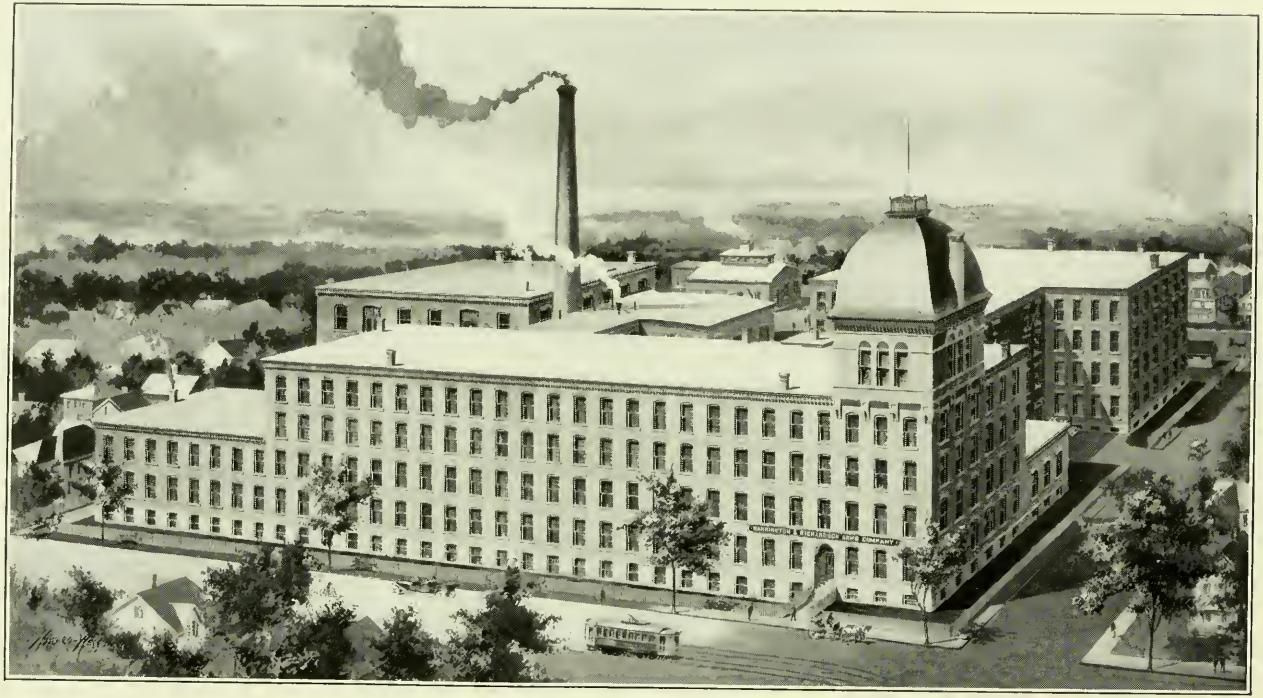
Worcester—Pioneer in Envelope Making

THE FIRST successful envelope-folding machine in the United States was invented in 1853 by a Worcester physician, Dr. Russell L. Hawes, who lived on Salisbury Street in the house now owned by Mrs. Charles Baker. He was the founder of the present W. H. Hill Envelope Company Division of the United States Envelope Company. His machine was a crude affair and did not attempt to gum the sealing flap of the envelope, this operation being done by hand before the envelopes were fed into the machine. The important point of this invention was the self-feeding device; the blanks having been sealed were fed into the machine in bunches of about 500. Gum was applied on the under side of the picker, which descended on the pile of blanks; the top blank, adhering to the picker, was lifted from the pile and was taken by a carriage to a point over the folding box, where a plunger the size of the envelope forced the blank down to the bottom of the folding box; here two wings folded over the side flaps, the gum which had adhered to the blanks now served a second purpose of sticking the envelopes. This same principle is used on the modern high-speed envelope machines.

Dr. Hawes's machine made about 13,000 envelopes in a day of 10 hours and three girls operated two machines. The product of one girl to-day is frequently as high as 70,000 per day on one machine.

The next Worcester man to effect a valuable improvement in envelope making was James G. Arnold, when in 1858 he devised a machine for cutting the envelope blanks from a roll of paper and gumming and folding the blanks at one operation. The important feature of this machine was the drying chain. The gum on the seal flaps had been applied by hand previously. By Arnold's device, after the envelopes had been folded they were deposited in a drying chain or endless belt, which was fitted with fingers to keep the envelopes apart until the gum on the sealed flaps was dry.

David Whitcomb financed this machine and in this way the Whitcombs became interested in the envelope industry. The mechanical genius of Henry D. Swift had been recognized by Mr. Arnold, and he made overtures to him to enter the employ of the Bay State Envelope Company, established in 1864 by G. Henry Whitcomb. Mr. Swift could not see his way clear at that time to make a change in his trade as a cabinet-maker, and his brother, D. Wheeler Swift, who was then working at South Dedham, was secured in his place. About a year was spent in trying to make the Arnold machine run satisfactorily, but without success. Trade was



Harrington & Richardson Arms Co., Worcester, Mass.

President, Edwin C. Harrington

Treasurer, George F. Brooks

John W. Harrington

developing and other inventors were making progress with other machines, among them George M. Reay, of New York. The Bay State Envelope Company bought some of these machines and Abram A Rheutan, who was for many years connected with the W. H. Hill Envelope Company as the general superintendent, came to Worcester for the purpose of installing these Reay machines.

The Bay State Envelope Company was reorganized as G. Henry Whitcomb & Company, with a factory in Bigelow Court, in 1866, and five years later the Swift Brothers invented their first envelope folding machine. This machine was known as the Swift round-table machine and had a product of about 35,000 envelopes per day. It simply folded the envelope, but at the same time they invented another machine to gum the sealed flaps, and these two machines together could at that time produce envelopes probably as cheaply as any in the world.

In 1876 the Swifts invented their first self-gumming machine. This machine by one operation turned out a completed product of 35,000 envelopes per day of 10 hours. One girl could run two of these machines making 70,000 a day, the product being registered by means of a clock. These machines were the only ones then in existence having a registry device.

In 1884 Messrs. D. Wheeler Swift, Henry D. Swift, John S. Brigham, and James Logan severed their connection with the Whitcomb Envelope Co., and formed the Logan, Swift & Brigham Envelope Company, which was incorporated in February of that year and which constitutes that division of the United States Envelope Company to-day. Practically all the envelope-folding machines in use in the Logan, Swift & Brigham Co. Division, the largest given up solely to the manufacture of envelopes in the world, are the product of the inventive minds of D. Wheeler and Henry D. Swift. These two brothers, with their record of five distinct and separate envelope-folding machines, have probably done more than any two men in the world in the development of this industry. There are now six envelope factories in Worcester, producing from 10 to 15 million envelopes daily.

Another machine which has been recognized as one of the best and most rapid producers is that designed by John A. Sherman. This machine represents the latest and best developments in the line of automatic gumming, folding, drying and counting envelope machines. It is the result of 30 years' experience by the designer of it in the developing and operating of automatic envelope machines. He is president and manager of the Sherman Envelope Co., and the various features of this machine have been carefully worked out to meet the actual conditions of practical envelope manufacture. This machine can turn out 150 envelopes per minute, is said to be the most rapid in existence and was originally designed 15 years ago, by Mr. Sherman, being perfected as opportunity showed its possibilities.

Loring Coes

Coes Wrench Co., Worcester, Mass.

President and Treasurer, Frank L. Coes General Manager, Frederick Searle

The H. & R. Dependable Firearms

THE LATEST addition to the already extensive line of firearms manufactured by the Harrington & Richardson Arms Company is the self-loading or automatic pistol.

After a thorough investigation and consideration of the merits of both American and European automatic pistols, and although holding United States patents in its own name, arrangements were made with Messrs. Webley & Scott, Ltd., the leading British arms manufacturers, for the exclusive American rights to manufacture under their patents, with the privilege of selling throughout the world.

The points in which the new pistol excels are simplicity of construction, strength and reliability of mechanism, light weight and compactness. A separate pressure on the trigger is required for each shot, and the makers prefer to style this pistol "self-loading" rather than "automatic" to correct the erroneous idea that an automatic weapon fires itself and therefore is not under control of the shooter.

A positive safety, locking the firing mechanism, is provided for convenient operation by the thumb of the right hand.

It is claimed that this pistol has fewer parts than any other automatic pistol on the market. Coil or spiral springs throughout, reduce liability of breakage to a minimum.

The pistol can be dismounted and assembled for cleaning or oiling almost instantly and without the use of any tool.

The Harrington & Richardson Arms Co. was established in 1871 and incorporated in 1888.

Loring Coes—Inventor

LORING COES, inventor of the monkey wrench, died in Worcester, July 13, 1906. He was 94 years old and known as one of the most remarkable manufacturers of the East. His work in making Worcester famous as a manufacturing centre was contemporaneous with Ichabod Washburn, Crompton, and William T. Merrifield. He was born in New Worcester, April 22, 1812.

Loring, like many other boys, did chores on his father's farm and at 13 years was apprenticed to learn the carpenter's trade. After serving his time he engaged in patternmaking and general woodworking, and then with a younger brother, Aury G. Coes, formed a company and started the manufacture of woolen mill machinery at the old Court Mill at Lincoln Square. Later the plant was burned and the brothers took positions as patternmakers in Springfield, in Laurin Trask's foundry. While at work there Mr. Coes invented the monkey wrench. In 1840 they returned to Worcester and began the manufacture of wrenches under the firm name of L. & A. G. Coes, and afterwards began the manufacture of machine knives.

He invented much of the machinery in his shop.

Parker Wire Goods Co., Worcester, Mass.

President and Treasurer, Arthur H. Parker Secretary, Lewis M. McCallum

The Coes Wrench Company is recognized as the only plant in the United States where grinding is carried out to mathematical accuracy, and where instruments of precision are used in the manufacture of knife work. The shop has the finest hardening facilities in New England. The firm now conducted by Frank L. Coes has been in the wrench business for three-quarters of a century.

Charles Hill Morgan—Inventor, Engineer

CHARLES HILL MORGAN, until his death, two years ago, president of the Morgan Construction Company, manufacturers of rolling mill and wire drawing machinery, and the Morgan Spring Company, makers of fine steel springs, was an eminent mechanical engineer. He was prominent in the development of the wire industry and processes for rolling steel into the various commercial shapes. Almost without an exception the larger steel and wire mills of this country had their works machinery invented or designed by him.

He was a direct descendant of Miles Morgan, a native of Wales, who came to this country in 1836. His mother was a daughter of Dr. Noah Rich and a woman of superior ability and force of character.

Mr. Morgan was born in Rochester, New York, January 8, 1831, but his parents soon after moved to Massachusetts and settled in Clinton. His early education was received in the common schools of that day and at the Lancaster Academy.

At the age of 15 he began to learn his trade in the machine shop of his uncle, and soon developed a love for mechanical drawing. In 1852, when 21 years old, he was put in charge of the Clinton Mills dyehouse. Here he devoted himself to the study of chemistry, and was able to fill his new position with entire satisfaction and at the same time gain valuable experience in the management of men. For a time Mr. Morgan was draftsman for the Lawrence Machine Company and for Erastus B. Bigelow. While with the Lawrence Machine Company he was sent to Worcester to look after the now famous Merrifield engine on Union Street. which was built by that company and was at that time being erected.

In 1860 he joined his brother in a manufacturing enterprise in Philadelphia, but remained there only a short time. Returning to Worcester in 1864, he became the general superintendent of the Washburn & Moen Wire Works, a position he held for over 23 years, and was one of the directors of that company for over 11 years. While with the Washburn & Moen Manufacturing Company, Mr. Morgan built the first hydraulic elevator introduced into New England.

Not only did he take a leading part in the wire industry of America, but as a trustee of the Worcester Polytechnic Institute his inventive genius and business ability were applied in making the machine shop connected with that institution a place for thorough instruction and practice of mechanical engineers.

The Samuel Winslow Skate Mfg. Co., Worcester, Mass.

President and Treasurer, Samuel E. Winslow

Secretary, Otis W. Everett

Among the engineering societies with which he was identified are the American Society of Mechanical Engineers, American Institute of Mining Engineers, and British Iron and Steel Institute.

William T. Merrifield—Carpenter and Promoter of Industries

WILLIAM T. MERRIFIELD was born in Worcester in 1807. He served an apprenticeship of six years to the carpenter's trade, beginning when he was 15 years old. Prior to that, he worked on the farm. In three years he was entrusted with work.

He was a farmer boy with an idea of making Worcester a mechanical centre. He made, in embryo, a splendid combination—a farmer and a mechanic. He first began business in 1835 using a horse for power for five years when he put in an engine and added to his buildings.

He was interested in mechanical industries. For nearly 15 years his buildings were a hive of industry, until the big fire swept everything away in 1854. The district was rebuilt for industrial work and that part of the city has been a busy hive ever since.

Osgood Bradley Car Company

THE OSGOOD BRADLEY CAR COMPANY'S plant at Greendale is one of the largest of its kind and there are none better equipped for making all-steel cars, combination steel and wood cars, or wooden cars in the United States. In regard to the capacity of the shop, when running full it would be capable of turning out 600 all steel cars or that equivalent per year.

There are now (March 1) 1,110 men employed at the plant, but it is expected that before the gathering of the National Metal Trades members in Worcester, there will be added 500 more men to the payroll.

Osgood Bradley, grandfather of John E. Bradley, president of the company, was born in Haverhill. He came to Worcester while a young man and began the building of stage coaches in 1820—nearly a century ago, With the early beginnings of steam railroads he was among the first to build railroad cars, making the change from stage coach to railroad cars in 1833, his first place of business being at the corner of Union and School streets, a section of Worcester made sacred to many manufacturers as the place of first beginnings of industries which have since startled the world.

Later on, as the business developed, the elder Bradley moved his plant to Water Street, and in 1844 bought the property opposite the Old Union Depot, where the firm remained until it was compelled to move in 1909 to its present plant in Greendale to make way for the new Union Station

Graphic Arts Building, Worcester, Mass.

The Samuel Winslow Skate Mfg. Co.—Manufacturers of Ice and Roller Skates

THE SAMUEL WINSLOW SKATE MFG. CO. is the largest concern in the world devoted exclusively to the manufacture of skates, and none have the capacity for turning out skates which this firm has. It was established by Samuel Winslow, father of Congressman Samuel E. Winslow of Worcester.

American Car Sprinkler

Worcester is the birthplace of the car sprinkler. The man who invented it was J. B. Gathright, of Louisville, Kentucky. The capacity of the car is from 2,500 to 3,000 gallons. One car will sprinkle from 7 to 10 miles of street three times daily, according to the surface of the street, whether it be dirt, gravel, macadam or block paving. The car sprinkler is made by the American Car Sprinkler Co., of Worcester.

Morgan Construction Company—Pioneers in Rolling Mills

AS HAS been stated previously, the late Charles H. Morgan, of the Morgan Construction Co., made the first rolling mill in 1880. These Mills are the last word in efficiency and economy of producing wire rods, thin flats, merchant bars, small billets, etc.

Worcester takes the lead in rolling mills, and this is particularly true of continuous rolling mills, which have been designed and manufactured in Worcester by this company and put in use all the way from Chicago to Vienna. The number of rolling plants designed and built in the United States, Canada and Europe by this company is decidedly interesting. In addition to the above, the company has furnished a great amount of special rolling machinery throughout the world. It is also one of the largest producers of safe and efficient wire-drawing equipment, and regarded as one of Worcester's best firms.

Charles Thurber's Typewriter

IN 1843 a really complete typewriter was invented by Charles Thurber, who lived in Worcester at that time. He took out a patent, followed two years later by another, for a typewriting machine which, although very slow, was capable of doing good work. This model is interesting as affecting the letter spacing by longitudinal motion of a platen, a principle which is a feature of all modern machines. The Thurber machine was never manufactured, however, and the only model in existence is now preserved by the Worcester Society of Antiquity.

C. Stewart & Son, Worcester, Mass.

Members of Firm: James C. Stewart, John C. Stewart, Charles M. Stewart

The first record of an attempt to produce a typewriter is found in the records of the British patent office. These show that on January 7, 1714, a little over 200 years ago, a patent was granted to Henry Mill, an English engineer of repute, for a machine which was intended to do writing. "A device intended for the impressing or transcribing of letters singly or progressively one after another as in writing, whereby all writings whatsoever may be engrossed in paper or parchment so neat and exact as not to be distinguished from print." But the secret evidently died with the inventor as nothing is known of the machine.

The first typewriter ever constructed in America was the invention of William Austin Burt, of Detroit, better known as the inventor of the solar compass, who took out the first American patent ever issued for a typewriter in 1829. The machine was exceedingly crude and the record of this patent and the only model of the machine was destroyed by fire in the patent office in 1836. Between that time and 1873 many efforts were made to make a workable machine, until it was left to a man named James Densmore, of Meadville, Pa., who got a crudely written letter from C. Latham Sholes, a printer and editor, who was also collector of customs for the port of Milwaukee, and who had for years been experimenting on a machine with a friend named Samuel W. Soule, also a printer, to perfect a machine which was finally taken by Densmore and a friend, G. W. N. Yost, to E. Remington & Sons, who had a gun factory at Ilion, N. Y. This firm agreed to undertake the manufacture of the machine, and their skillful workmen so improved on the machine that it finally came to be known as the Remington Typewriter.

The first machines were ready for the market in 1874, and the firm of Densmore & Yost were the first selling agents. The commercial side of the venture was a checkered one, for the public had to be convinced that the machine was a practical one.

Success soon followed, however, and for the last quarter of a century the typewriter has taken high rank as one of the most useful, necessary and ingenious devices of the age. Nothing has appeared more calculated to spread intelligence since the invention of printing, and the typewriter is now found in every office of any size.

World-Labeling Machines

WORCESTER is the home of the world labeling machine manufactured by the Economic Machinery Co., one of the members of the National Metal Trades Association.

Frank O. Woodland, of Worcester, vice-president and treasurer of the company, is the inventor and designer of the machine, which was first placed on the market over 10 years ago, and was the first machine to be successful in placing two labels on a bottle at one operation.

Although the labeling art was well developed at the time that the Economic Machinery Company entered the field, no machine had ever

John J. Adams Cutting Die Shop, Worcester, Mass.

President and Treasurer, John J. Adams Vice-President, John J. Adams, Jr.
Secretary, Amelia A. Adams

been devised that would place a couple of labels at one operation and do it sufficiently successful to be used regularly.

This machine was invented in Worcester and has always been made here, and this company is the largest maker of labeling machines exclusively in the world.

Pliny Earl—Card Clothing Expert

A. H. HOWARD of this city says that Pliny Earl, of Leicester, made the first card clothing for Samuel Slater, who started the first cotton mill in this country in the year 1790.

This card clothing was made with a leather foundation, the teeth made on a hand machine, the holes pricked in the leather with two needles mounted in a handle, and the wire teeth were then set in the leather foundation by hand; a process exceedingly slow when compared with the speed of card setting machines of the present make that form the teeth, prick the holes and set the teeth at the rate of 400 per minute.

Hand cards were used at a much earlier date than card clothing.

The machine for setting card clothing is an American invention being patented in the year 1797 by one Amos Whittemore. The patent was reissued in 1809, over 100 years ago. When the petition for the renewal of the patent came before Congress favorable action was taken, after some little deliberation, by a vote of 55 in the affirmative and 18 in the negative.

There are no records of any speeches delivered for or against the renewal of this patent, but it is stated that John Randolph of Roanoke thus expressed himself with the most emphatic eloquence for which he was noted: "Yes, I would renew it to all eternity for it is the only machine that ever had a soul."

While Mr. Whittemore obtained the patent and profited thereby it is understood that not he but Eleazor Smith, Walpole, was the real inventor of the machine. They had been shopmates and it is claimed that while Mr. Smith was building the machine Mr. Whittemore, who was also a skilled mechanic, managed to keep himself informed of what Mr. Smith was doing. This was not difficult as Mr. Smith was of a confiding nature. From Mr. Mr. Smith's ideas Mr. Whittemore built a machine which he sent to the patent office before the completion of Mr. Smith's machine.

At the expiration of the renewed patent in 1825 orders were received from England and France for machines, but their complexity was so imperfectly understood by foreign mechanics that it became necessary to send over American workmen to set up the machines and put them in running condition.

Because of the patent on this machine, which compelled the payment of royalties to Mr. Whittemore, many firms in this country still manufactured card clothing by hand in the old manner of pricking holes in the foundation, making the teeth on a separate machine and sending the pricked foundation into the homes in town and country where the women and children set in the teeth one at a time.

L. S. Starrett

The L. S. Starrett Co., Athol, Mass.

President, L. S. Starrett

Vice-President, F. A. Ball

Treasurer, F. E. Wing

L. S. Starrett—Mechanic, Dairyman, Inventor

ON THE 25th of April, 1914, L. S. Starrett will have reached his 78th birthday. A ripe old age, but one that finds this veteran of the hardware trade enjoying the best of health and pursuing his usual business and social activities.

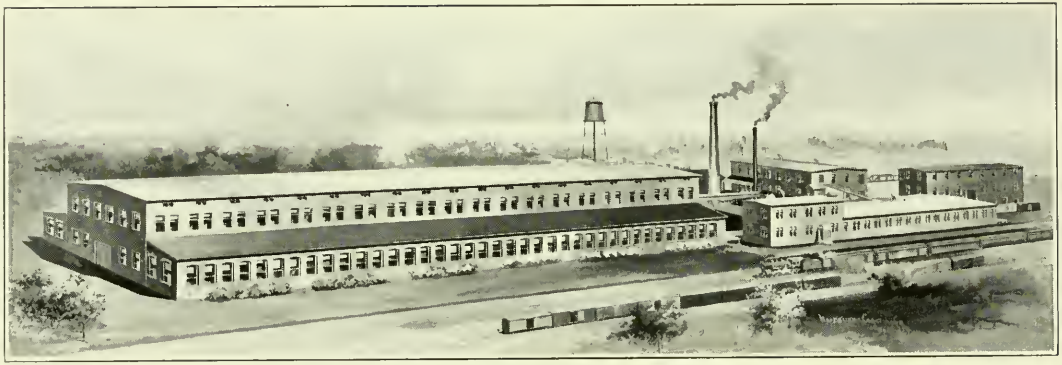
Mr. Starrett was born in China, Maine, April 25, 1836. His country school privileges were limited to about two months in the winter and a short term in the summer.

He early developed a keen interest in things mechanical and loved to work with tools. When he was nine years old he saved up his pennies, which then came few and far between, and with a few he borrowed from his friends, bought at an auction sale a bit brace, a set of bits, a screwdriver, and a spokeshave. From that time on he was wrapped up in "making something." At first it was simply things for the house and barn, but as he became adept as a mechanic he busied himself by making things of his own origination.

At the age of 17 his desire to work constantly with tools became stronger than his love for the farm, so he left home to go to Newburyport to work in a machine shop. But work was slack and there was no room for him. Nothing daunted, he went to work on a dairy farm, and soon became an efficient dairy man. But on rainy days he was always working at his inventions. So well did he apply himself that, in 1865, he took out three patents—one for a washing machine, another for a butter worker, and a third for a meat chopper. To manufacture the inventions, he sold his farm interests, and started a machine shop in Newburyport. It was in introducing these products that he first started his acquaintance with the hardware trade. In 1868 he moved to Athol, where the Athol Machine Company was organized for the purpose of manufacturing his inventions, among them being the American meat chopper, and the shoe hook fastener. After he had been with the Athol company several years, misfortunes began to come to him. He lost his wife who had been a constant help and inspiration to him; lost control of stock in the company, and with this went his position; and last but not least, he lost his hearing. With four motherless children to provide for, with no position and little money, and with his hearing gone, an ordinary man would have knuckled under. But Mr. Starrett believed in hard work. He sat up until the small hours of the morning working out inventions with which to provide for his children and himself. He soon felt sure enough of some of his inventions to start in business again.

His first product when he commenced business for himself, was the tool that started the Starrett line. It was the Starrett combination square, invented after he had seen how inadequate was the ordinary square for mechanics.

It met with instant success. Incidentally, this led to the addition of



Warren Steam Pump Co., Warren, Mass.

steel rules, calipers, squares, etc.; eventually to the full line of Starrett tools. The first few thousand of his squares were manufactured for Mr. Starrett under contract by a machine shop when business was dull. When he attempted to introduce the combination square to hardwaremen, they admitted its advantages, but said there was no call for it, and until mechanics knew about it they would not care to stock it. Mr. Starrett saw the point, hired agents to canvass manufacturing establishments, take orders and sell to the men. The success which met the introduction of this first tool encouraged him to invent and market others.

His business soon outgrew his manufacturing capacity, so he was obliged to move to larger quarters. To his original combination square he added steel rules, surface gauges, screw pitch gauges. He was soon compelled to enlarge his quarters again. so he bought a large factory. In 1888 he added two stories to this, and in 1894 he built two large additions. Since then the plant has received many enlargements.

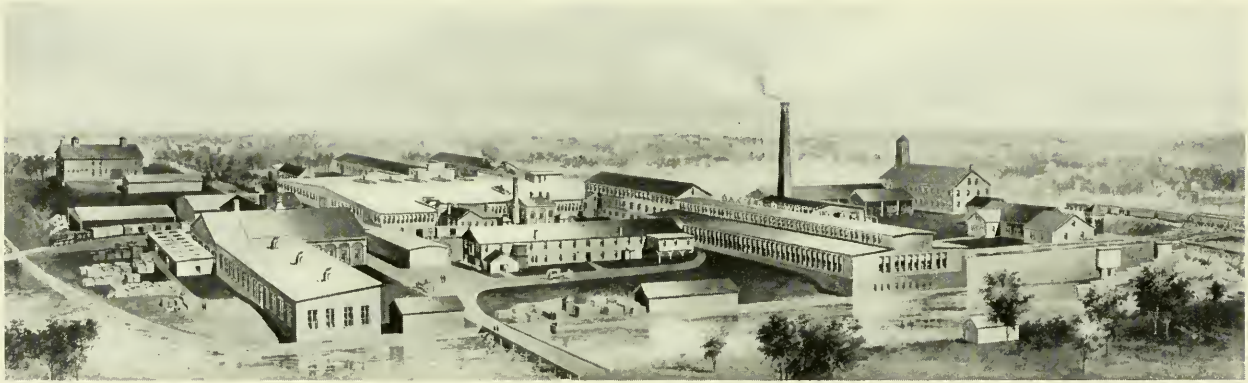
Mr. Starrett is one of Athol's leading citizens, and one of the most public spirited. He is a great friend of the young men, and is ever ready to lend a helping hand. The Athol Y. M. C. A., was made possible through his generosity, for he gave not only the site but $35,000 as well. It is interesting to know that the site of this Y. M. C. A. building is also the place where his first machine shop stood, and to make way for the new building, the machine shop—one of Athol's landmarks—was torn down.

Tech Graduate Made First Auto in America

SEVERAL WEEKS AGO the man who made the first automobile in America, Elwood Haynes, visited Worcester. He is a graduate of the Worcester Polytechnic Institute, and returned after a period of 33 years to his alma mater with the distinction stated above. He had the pleasure of visiting many places of interest in his old home town and marveled at the tremendous progress shown—equally as great as the advance made in locomotion and transportation in that time. Mr. Haynes toured the Heart of the Commonwealth in a car made possible by his genius, and afterwards was banqueted by his friends in the Auto Club and congratulated on the test he made of stellite, his new metal alloy, which he conducted at the Tech in the presence of an admiring audience. This metal alloy is harder than any metal yet discovered.

Mr. Haynes is cousin of Prof. George H. Haynes, of the Tech, who entertained his relative while in Worcester.

The Haynes Automobile Co., is located in Kokomo, Ind., and it was there that the Worcester Tech graduate made the first car, and thus placed millions of pleasure-loving as well as business people under everlasting gratitude to him.



Baxter D. Whitney & Son, Winchendon, Mass.

Proprietor, William M. Whitney

Warren Steam Pump Company

IN THE TOWN of Warren, 25 miles from Worcester, there has been in existence for the past 16 years a company which probably cannot be duplicated in the state. The Warren Steam Pump Co. broke all traditional records in organization, as it was formed by the employees of the company rather than by a few men commonly called employers. These citizens of Warren had previously been employed by a large pump company which was absorbed by the so-called pump trust, and which moved away from the town. But the men were not to be denied employment, and so formed the Warren Steam Pump Co. and invested their savings in that company's stock. Many of the workmen owned their homes and were interested in the town's progress.

It is little wonder, then, that this company, with its workmen as stockholders, every one loyal and working for the success of the entire plant, through the sterling quality of its product, has made most gratifying progress. It has always manufactured a strictly high-grade pumping apparatus, and has furnished practically all the leading engineering concerns in the country with its product. It is now supplying battleships and torpedo boat destroyers with a large number of marine pumps, built under their own patents.

It is the first concern known to use rolled Monel metal linings for steam pumps, which cannot be corroded either by the action of salt or water containing impurities. Since the company was formed, it has always catered to a class that demanded high-grade material. Branch offices of the company are in Boston, New York, Philadelphia and Chicago.

Just Stiffen the Upper Lip

When troubles come thick upon you,
From depression in business,
From hustling competition without
And politics within the U. S. of A.,
From legislative halls,
From lack of business methods,
From inefficient help,
From any cause,—
Don't give up the ship.

Just stiffen the upper lip,
Smile while every one thinks you're beaten,
And go to it, American fashion,
And win;
For the business world lauds a winner.
And Success brings Success.

Baxter D. Whitney

Warp Compressing Machine

IN 1894 David McTaggart, a well-known mill man in Worcester and a native of Scotland, having made noted improvements in spooling machinery, organized the Warp Compressing Machine Company, and began building machinery embodying his patents in Worcester.

He continued the business until his death, in 1907, when his son, David D. McTaggart, became manager and continued as such until his death, in 1912. Since then a new corporation has been formed, the first of its kind in Worcester, being owned, controlled and managed exclusively by Worcester women.

The officers of the new corporation are president, Mrs. Agnes L. McTaggart, treasurer and general manager, Miss Martha L. McTaggart. Those with Miss Anna L. McTaggart comprise the board of directors. The new company is located at 105 Exchange and is doing a prosperous and growing business.

Rice, Barton & Fales—
Paper Machinery Manufacturers

THE RICE, BARTON & FALES Corporation was established in 1837 and is both one of the oldest and one of the largest in the country in the manufacture of paper and pulp machinery. There is only one other firm in the United States building paper, pulp and similar machinery which was established prior to the Worcester one.

Rice, Barton & Fales has a world-wide reputation in that trade, and has always been regarded as one of Worcester's best firms.

Baxter D. Whitney—Inventor
Oldest Member of the Worcester Branch

A PIONEER in the manufacture of woodworking machinery in Massachusetts, is Baxter D. Whitney, of Winchendon, oldest member of the Worcester Branch, N. M. T. A. He was born in Winchendon, in 1817. His early education received in his native town was supplemented afterward at Hancock, N. H., and Fitchburg.

The lad's attention was early turned to machinery, probably largely owing to his father's owning a woolen mill in Winchendon. It was in the repair shop of this old mill that Whitney received the practical part of his education, that which shaped his future life in its business sense. His mechanical genius was manifested by his construction, when 10 years of age, of a small saw mill, operated by the water collected in a pond he formed by damming a small stream. Although the lumber sawing capacity was limited, even in proportion to the power expended, the effort showed the bent of the young mind and indicated the sphere of its future activity.

Before Baxter D. Whitney had reached manhood he had become a skilled mechanic, able to hold his own with men of many more years or experience. He was observant, ingenious, quick to grasp conditions, and could look ahead.

Mr. Whitney's first business venture was the building of machinery for the manufacture of tubs and pails, utilizing for this purpose a corner of his father's factory. In 1837, however, he built 16 looms for weaving cashmere. His next step was to build two or three steam jigs. Then, in an old building that stood back of the present factory, the young man constructed a planing machine. Although this was not the first cylinder planing machine ever made, it was certainly the first practical cylinder planer built, and embodied, in addition, some other innovations — Mr Whitney's original ideas.

The first Whitney planing machine was constructed in 1846. The machine was a practical success and some of the then new features incorporated by the young man in his first planer, are used in every planer turned out by the firm to-day.

Mr. Whitney's thoughts had been attracted to wood-working machinery on account of the extensive forest growth in the locality where he resided and its surroundings. It created a local demand for machinery that would work up the product at hand. The improvements made in the machines he built attracted more than local interest, and demands came in from various sections for still other machines. Usually the wants of the customer were not only met, but the inventive genius of the young man was brought into play to secure some changes or additions that made the machine constructed by him a decided improvement over the one previously used.

A feature that makes the establishment and growth of this business seem the more remarkable, is that all supplies for the Whitney shops were transported from Boston and other points by teams, the railroad not having been built until 1847.

The present dam at the Whitney plant, which furnishes the water power, was built by him in 1845, an excellent piece of engineering work to have withstood the winter frosts and spring freshets of 60 years.

In 1857 Mr. Whitney made his first scraping machine. It was used for paring box rims, and like the planer, embodies some new ideas that are still in force, no better ones having been found. About that time also the Whitney shaper and the Whitney gauge lathe were designed.

Mr. Whitney has always been gifted with a wonderful memory for names and details, which advancing years seem not to have impaired.

At the breaking out of the Civil War, a large number of Mr. Whitney's employees enlisted, and he was strongly inclined to close his works. But so many new orders were received that he was kept busy building machinery for turning out the wood stocks used on the old-fashioned muskets and even on the then new Springfield rifles. Mr. Whitney himself built the machinery employed to do this work.

To attempt to recount the influence of this one man during the last

60 years, on the wood-working industry, would be an impossibility. But to Baxter D. Whitney is, in a large measure, due much of the improved machinery, many added facilities and a great deal of the progress that has been made.

In his own establishment he displayed a similar spirit of advancement. The Whitney workmen were always equipped with the best tools obtainable. He was the first to introduce a radial drill into the United States. This machine was bought from Sir Joseph Whitworth, of Manchester, England, in 1867, and its present condition is still good enough to do most creditable work.

Like many another successful industrial establishment, the Whitney works started from humble beginnings. Little by little, guided by genius, and aided by circumstances, they increased until now they give employment to a large force of men, and occupy in buildings and ground, an area of about 10 acres.

At the beginning Mr. Whitney placed his standard high, a standard he has not only maintained in every machine turned out of his plant, but he has moved it constantly forward as the demands of the day and his judgment and foresight pointed to needed improvement.

For the past few years Baxter D. Whitney has exercised but a passive interest in the works, the active management devolving entirely upon William M. Whitney, his son and partner, whose aim, true to that of his father, is to make the Whitney Plant a model of its kind, and to maintain the same position for the Whitney machines that they have always occupied in the wood-working world.

A Thousand Vacuum Cleaners per Day

THE ABOVE is the record of the M. S. Wright Co., one of our members, when the firm is running full blast. Who invented the vacuum cleaner? That is about as stiff a problem as determining who invented the process for drawing wire. It would seem as if the vacuum cleaning process came into the world's use flying gently over the air—that it came so gradually that there was little or no special invention at the first, from the fact that machinery for creating vacuum had been invented and used for many years in other lines of work, for instance, the melodeon or reed organ, which employed suction to operate the reeds. There are many other uses, and it was not until nozzles or means of getting the vacuum into contact with the carpet or surface to be cleaned, became general, that vacuum cleaning was made practical.

In England the Booth patent was considered the most practical, and in America for installing plants the Kenney patent has been acknowledged as the best, but there are thousands of patents and various types of machines so that it is difficult to say who really was responsible in the first place for vacuum cleaning. This firm manufactures the pneuvac cleaner, sold through the Pneuvac Company in Boston, which the company controls.

M. S. Wright Co., Worcester, Mass.

President, Morris S. Wright Vice-President, Fred L. Drury Treasurer, Henry H. Wright

Secretary, Clifford L. Wright Superintendent, Clayton M. Wright

When the firm operates its full force, full time, it can turn out 1,000 machines per day.

The art of cleaning by means of vacuum has been known for several years, but it is within the last 10 years that it has become known in general. Several crude machines were invented 30 years ago but were not successful.

Less than 10 years ago it would cost $6.00 or $8.00 to clean an average sized carpet while at the present time it is practically only a few cents. The greatest factor towards making vacuum cleaning universal or commercial is electricity. Where five or six H. P. was necessary a few years ago, an electric motor of less than ¼ H. P. is sufficient to-day. The second factor is the newly improved type of machine that operates with little or no friction, so that when the power is applied to the cleaner the efficiency at the nozzles is about 90% of the total power exerted.

The best type of portable electric machines to-day use only 12 cents' worth of electricity for ten hours, or a trifle over a cent an hour. This fact, of course, made electric cleaning more popular.

Science, however, never stands still and is always involving and to-day by means of the carpet type of cleaner it is possible to clean the heaviest and dirtiest carpet thoroughly as well as with the old type of electric or hand machine.

To accomplish this, however, the machine must be scientifically constructed and perfectly built using roller bearings and every possible means of avoiding friction. One person can operate it the same as a carpet sweeper and does not require but a little more effort than the carpet sweeper.

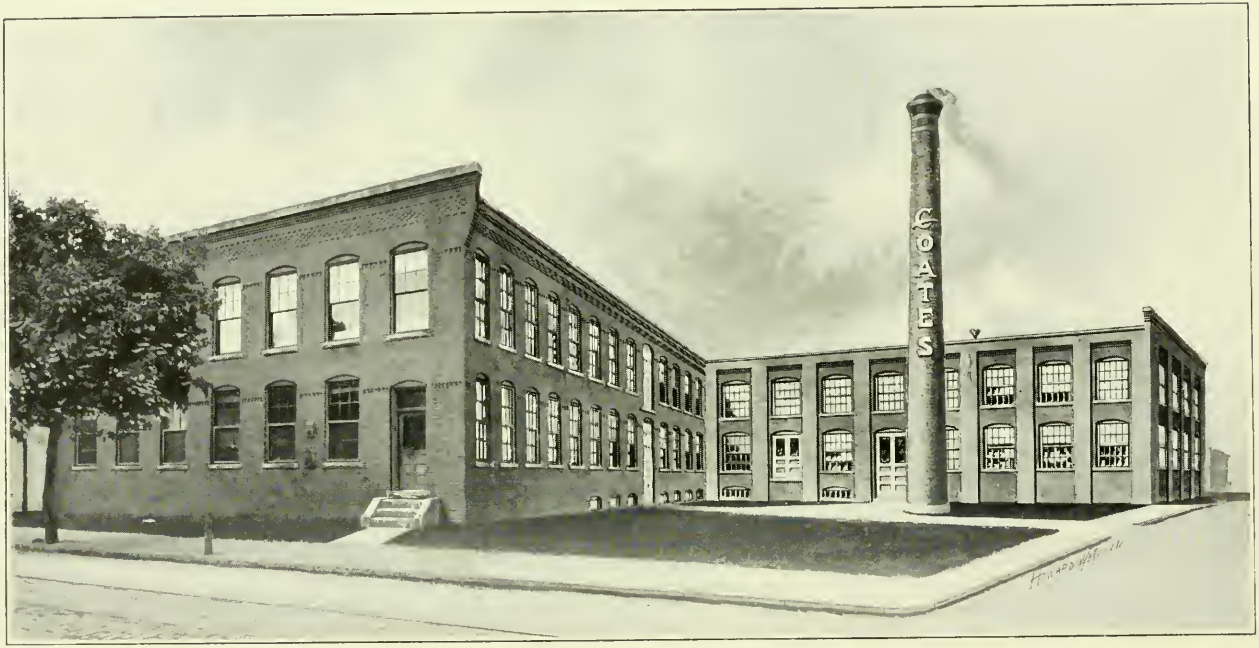
Albert Curtis—Manufacturer, Benefactor

ALBERT CURTIS was born in Worcester, July 13, 1807. While very young he worked on his uncle's farm in Auburn, and at the age of 17 began work as an apprentice with White & Boyden, manufacturers of woolen machinery, at their factory in South Worcester. Later he began the manufacture of machinery and in 1842 the factory was destroyed by fire. It was rebuilt and operated as a mill for the manufacture of cotton sheeting Mr. Curtis became a partner with the late E. T. Marble, under the name of Curtis & Marble Machine Co. This firm is one of the most reliable of its kind in the trade.

Mr. Curtis died July 27, 1898, aged 91 years. By his will, the local Young Men's Christian Association received a large sum of money.

George H. Coates—Inventor and Designer

THE COATES CLIPPER Manufacturing Company was started in a very small way by George H. Coates in Worcester in 1876. Mr. Coates was graduated from Windsor Academy and served his apprenticeship there in the manufacture of firearms. Coming to Worces-



Coates Clipper Manufacturing Co., Worcester, Mass.

President and Treasurer, George H. Coates General Manager, B. Austin Coates

ter, he was employed as assistant superintendent of the Ethan Allen Company and was in their employ until the panic of 1875 made business conditions in that line so uncertain he decided to take up a specialty of his own.

At that time very few clippers were used in the United States, and these were imported from England. They were, of course, very expensive, and the cost of repairing parts and resharpening were prohibitive. Seeing a future for this industry, Mr. Coates started in by designing special machinery for sharpening these foreign-made clippers. The same ideas are involved in the company's grinding machines to-day. His venture met with such success that he designed several improvements on clippers and started shortly to manufacture them.

A human hair measures one-thousandth of an inch, and a pair of plates must be subjected to at least 30 pounds pressure to resist the hair; the plate being very thin makes the question of grinding vital.

In 1880 Mr. Coates built a small shop on Chandler Street and has added to it from time to time until to-day he has over an acre of floor space and employs nearly 100 men.

The Coates Clippers are to-day made in nearly 100 styles for human or animal hair, covered by 60 patents, and are sold all over the world. Few people think when glancing at woolen garments that the wool is removed from the sheep almost universally to-day by sheep shearers. This is but one of the manifold uses to which their output is devoted.

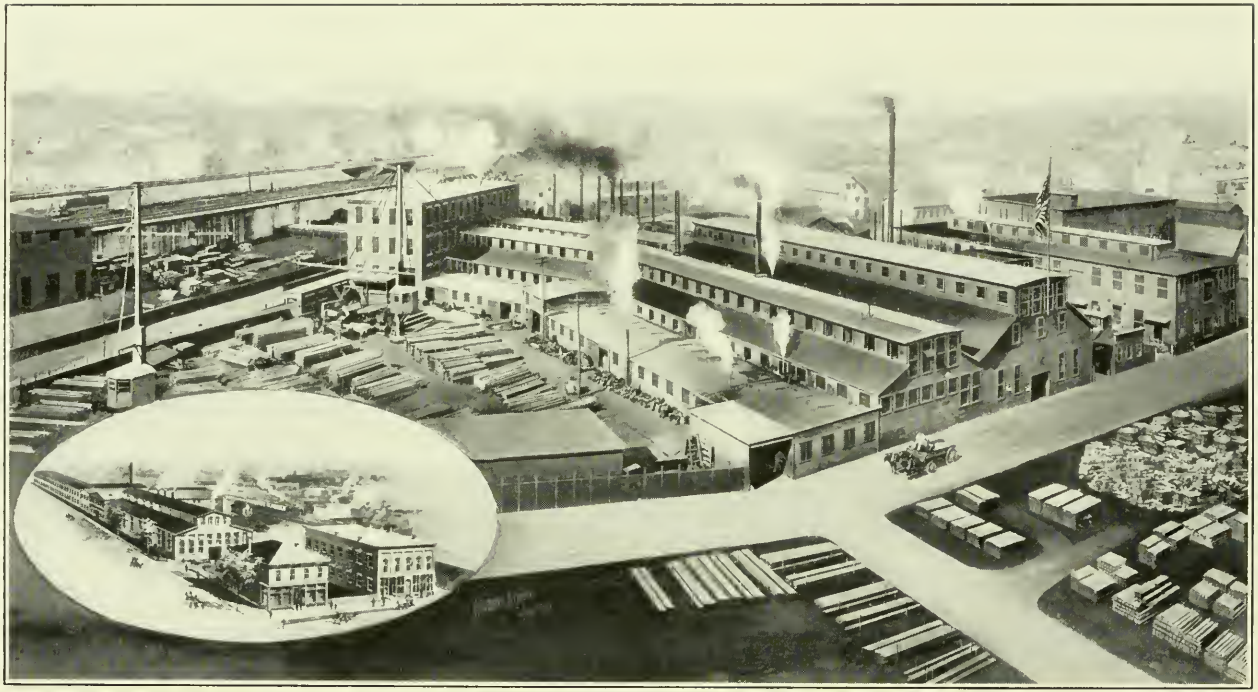
Several years ago Mr. Coates associated with him his son, B. Austin Coates, who is general manager.

Last year the company milled 12,000,000 teeth for hair cutting. In the manufacture of horse clipping and sheep shearing machinery a flexible shaft is necessary, and this being an exclusive patent of Mr. Coates', he decided about four years ago to specialize on flexible transmission. To-day the company makes this shafting in sizes transmitting from one-tenth horse power in speedometer and dental engines to 150 horse power used for heavy unit transmission work. The firm also makes flexible shaft specialties, such as massage machines, electric drills, multipliers, varnish rubbing outfits.

Henry D. Perky—Inventor, Idealist, Soldier

HENRY D. PERKY was not born in Worcester—Ohio was his home—but it was in Worcester that he became famous, and his product is known to-day the world over. Mr. Perky first began to manufacture cereals—shredded wheat—in Boston, but he did not find conditions at "The Hub of the Universe" to suit him, and in a few months removed to Worcester. In 1892 he began the manufacture of shredded wheat in a shop at 57 Jackson Street, and while there he built up a tremendous business.

Many of Worcester's busy men and women will remember with pleasure and satisfaction the numerous course dinners Mr. Perky entertained them to while he was demonstrating the many ways in which



Wyman & Gordon Co., Worcester, Mass.

President and Treasurer, Lyman F. Gordon

Vice-President, Harry G. Stoddard

General Manager and Secretary, George F. Fuller

shredded wheat could be made attractive for table use. There were appetizing meals of every description, to which Worcester's leading business and educational people were invited, and at which Mr. Perky and his able assistants served as many as 25 to 40 courses. The writer of this book attended many of these functions in his capacity as a newspaper man. They were always a big success.

Mr. Perky bought the Oread Castle and converted it into a school for domestic economy, which he carried on for several years, and for which he gave, free of charge, a complete course to one girl from every state in the Union. But in 1903 the shredded wheat business became so enormous in volume that he moved his factory to Niagara Falls, and there the business passed out of his hands. The building is one of the best in the country. Later Mr. Perky went to Baltimore County, Md., where he established another Oread on similar lines to that in Worcester, situated near Glencoe Station. He died several years ago from a stroke of apoplexy, aged 62 years.

He was a veteran of the Civil War, had practiced law, was a scholar, and thought and acted in large things. He invented a steel tubular railroad car which he declared would prevent telescoping of cars in railroad accidents.

Eight Hundred Hides Per Day

THE GRATON & KNIGHT MANUFACTURING CO. of Worcester has the largest and best equipped plant of its kind in the world for tanning and currying hides and manufacturing the same into leather belting, the capacity being over 200,000 hides per annum.

The firm was established in 1851, incorporated in 1872 with a capital of $100,000, but the company now has a paid-in capital of $2,000,000, showing the steady and substantial growth characteristic of Worcester's industries. The first tannery was built in 1867, with a capacity of only a few hundred hides annually. The firm now manufactures about six miles of leather belting per day, and cutting up leather that would be the equivalent of 800 hides per day, employing about 1200 men.

The firm has stores all over the United States and in several foreign countries. An important part of the organization is an engineering department, which makes an exhaustive study of adapting special belts to special lines of work with a view to developing the most economical power transmission that can be produced.

The Whittall Mills

THE WHITTALL business was founded in 1880 by its present owner, M. J. Whittall. In 1872 Mr. Whittall came to this country from England, became superintendent of the Crompton Carpet Co., and upon the dissolution of that concern started his present business with a few looms brought from his native country.

David H. Fanning

From this modest beginning, the immense group of mills in South Worcester developed. Every year or two it has been necessary to add on to the old buildings or to build new ones to supply the increasing demands for Whittall fabrics, known the world wide over.

Mr. Whittall is now the largest individual carpet manufacturer in the world. He is one of the beloved employers of labor in Worcester, and the loyalty and efficiency of his work people is the best test of their fair treatment. With Mr. Whittall is associated in the firm his son, Matthew Percival Whittall.

The firm name is the Whittall Associates, the officers being: President and treasurer, Matthew J. Whittall; vice-president and assistant treasurer, Matthew Percival Whittall.

In connection with the Edgeworth Mills, Alfred Thomas has as a partner Matthew J. Whittall.

David H. Fanning—Corset Manufacturer 83 years young

ONE OF THE favorite attractions of visitors to Worcester is the Royal Worcester Corset Co.'s plant on Wyman Street. They may walk into the office and ask to be shown through the factory, and their wish is granted.

One may say that this is a rather unusual proceeding to ask such a favor while business is in full swing. It is in most factories, but not in the Royal Worcester. There one will find a staff of young women whose duty it is to conduct parties over one of the most ideal factory plants in the United States. It does not in the least matter whether there is a party of 20 or 60 to be conducted or whether one is all alone stealing an hour off from a busy day, an attractive and intelligent girl will show the wonders, for it is plainly evident that the employees are as proud of their plant as is the president, David H. Fanning.

Mr. Fanning has reason to be proud of his factory and his employees, of the grounds surrounding the buildings and of his product, for in these he sees the realization of an ideal he placed before himself when he first began the manufacture of corsets with one assistant in a small room 50 years ago. The one small room has grown to be one of the largest, most modern and best equipped plants, and instead of the one woman employee there are nearly 2,000 people, mostly women and girls—at work the year round.

In many other lines of business there are dull times, but women wear corsets 365 days in the year and if there is a change of fashion in London and Paris, the styles of last year may be quite the vogue in China and Japan, with that of last spring just coming out in Australia or New Zealand. It will be seen from that statement that the Royal Worcester corset is to be found all over the world which is a statement of fact, for they are sold in 50 countries. And if woman should eventually become emancipated from the corset as she is from many forms of restriction, the Royal

Worcester people will probably go on manufacturing whatever lovely woman demands in its stead.

This marvellous plant is situated on a pleasantly shaded street. It is a great double-winged building, with no outside ornateness. Heavy oak doors swing easily to admit the visitors and they stand in a wide entrance hall, flanked on either side by rows of offices separated from each other by glass and oak partitions. In a few moments the sightseers are being greeted by an official of the company as courteously as though he were welcoming to his own home. He conducts them to a reception room overlooking lawns and flower gardens. One of the girls makes her appearance and they are shown into the busy factory. There the ceilings are lofty, walls are white, floors clean and every corner of the room is as light as outdoors.

Six hundred women and girls, all stitching corsets, is one of the sights. Plenty of room, and everything going forward in the most perfect order. All machinery is electrically operated, a touch of the foot of each operator starts or stops each machine on the instant. The air is freshened continuously by a blower system which accounts for the fresh, healthy look on the faces of the girls. In this stitching room are women who have been stitching corsets for upwards of 20 years.

There is the designing room, the cutting room with men at work cutting out three dozen corsets at a time. Here is a room where the bones are inserted, there the embroidery is cut, ribbon inserted, another where the heavy web elastic stocking supporters are made and stitched on. The boxes are manufactured, labels are printed on the spot as well as all the other printed matter that leaves the factory in the way of information or advertising. Under the glow of a radium light, the webs of material are examined and below are the great packing rooms.

Throughout the building 40 bubbling fountains supply drinking water, and for the girls who cannot conveniently go home for the noonday meal, there is a large diningroom with white floors and wainscotting, with palms and other plants in the windows. There are also special facilities for heating food. Near the diningroom is a library where the public library keeps a constant supply of books and the firm subscribes for a splendid assortment of all the best magazines. As the girls work by the piece, they may have a magazine near their machine to which to turn when a little relaxation is needed. A victrola furnishes the best music, while welfare classes and social uplift lectures are given by specialists during the noon hour. On the second floor is a miniature hospital with several cots and with a nurse in constant attendance. Care is given to safety to life and health. The water used is doubly filtered and cooled by the company's filtering and refrigerating apparatus and steel doors, automatically operated, separate the rooms.

The president's and directors' rooms are both finished in solid mahogany and on the large mahogany table in the president's room stands a silver loving cup presented Mr. Fanning on his 80th birthday by the employees. He has been the controlling spirit of the company from its inception, and to his individuality and leadership and that of a finely equip-

ped working force of executives and operatives, is due the tremendous success of this firm.

There are a dozen other corset factories located in Worcester, all of them doing a thriving business, although not in the volume of the Royal Worcester Co.

Worcester; 1848—1898

THE FOLLOWING verses by Frank Roe Batchelder were written for "The Worcester of 1898," edited by Franklin P. Rice and published by the Blanchard Press. It is 15 years ago since Mr. Batchelder penned these lines, but they are even more applicable to the Worcester of to-day than they were of the place that had just completed a half century of city life.

Five decades have her children kept
  Her civic honor free from stain,
While with the world she's laughed and wept,
  And shared her country's loss and gain.

Foremost in all that makes for good,
  With bounty ranging far and wide,
From the straight path of rectitude
  Her feet have never turned aside.

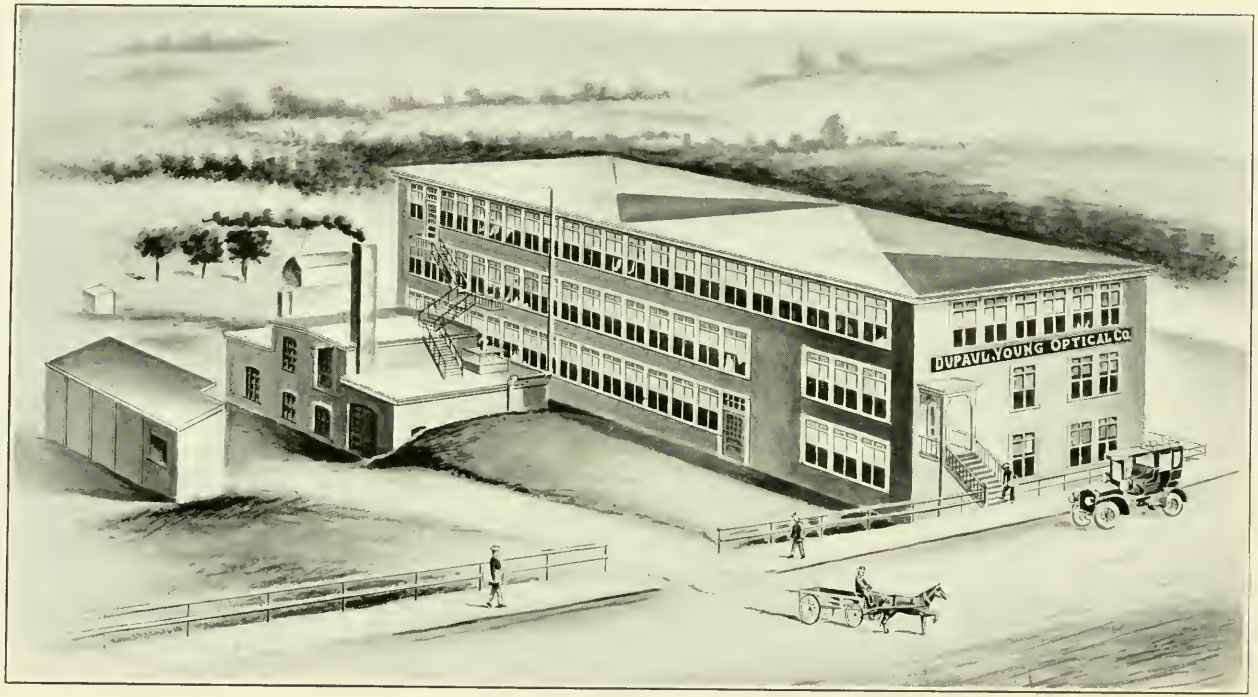
Fecund in wise and generous law,
  Her lesser sisters look to her
For high example, void of flaw,
  In genius to administer.

The hiss of Scandal's venomed tongue
  Dies ere it reaches her confines;
No hint of broken trust has flung
  Disgrace upon her large designs.

She toils and ventures, strives and builds,
  And seeks to sweeten life for all
The craftsmen of her thousand guilds
  Who answer to her every call.

Crowned by the smoke of many mills,
  She welcomes workers to her gate;
And in her children's hearts instils
  Love for the toil that makes her great.

Proud of her myriad machines,
  Her flashing looms, her glowing fires,
Not less to other good she leans,
  Not less to gentler art aspires.



Dupaul, Young Optical Co., Southbridge, Mass.

President, Leon E. Young

Treasurer, Joseph A. Caron

Secretary, Frank H. Orr

Superintendent, John M. Dupaul

Patron of every useful thing,
She sits at Learning's feet, nor finds
Her glory less that she should bring
Her tribute to the might of minds.

So has she made and kept her place,
And taught her name to distant lands,
Her skill the marvel of the race —
Far sought the labor of her hands

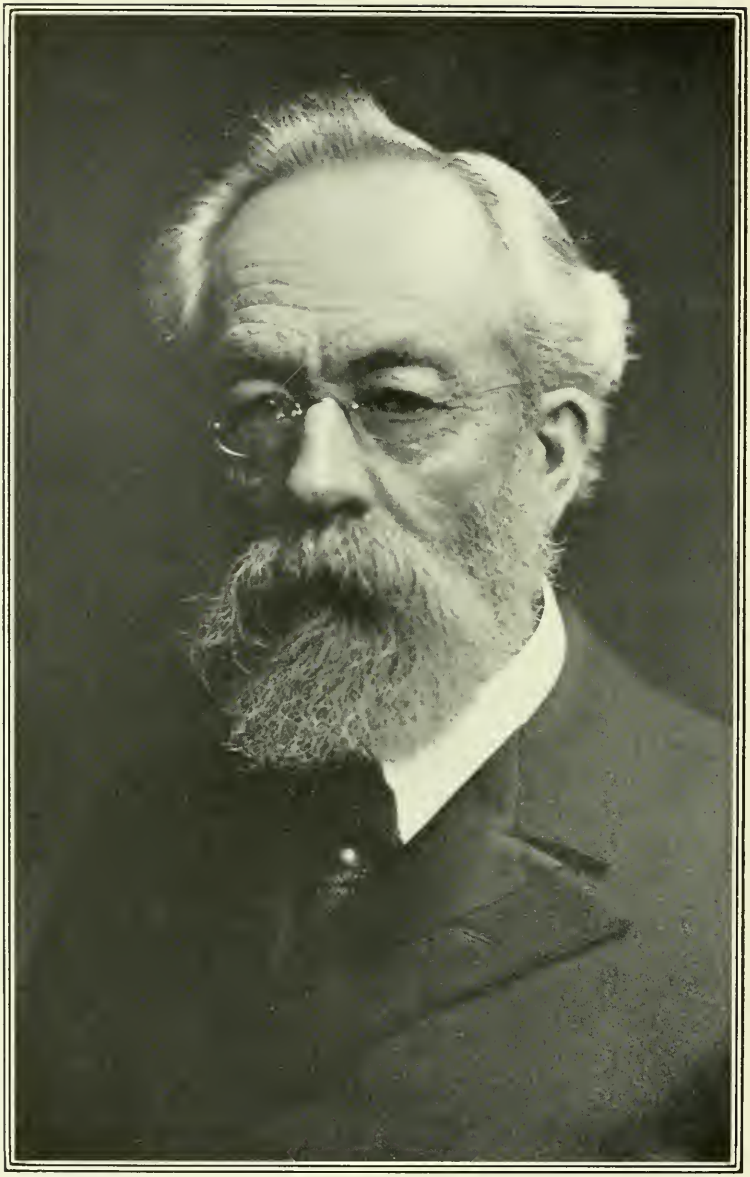
Great where her least result is known,
From her grim, busy factories
Her products go to every zone
In ships that sail the seven seas.

Yet does she make, when all is said,
No product more desired of men,
No brighter chaplet for her head,
Than her grand type of citizen.

In war, in peace, in school, in shop,
Beyond the knowledge of her name,
Rising insistent to the top,
Those she has bred have brought her fame.

A little while we hold her trust
Till Time sets others in our place;
Let us not see her armor rust,
Nor fear to look her in the face.

When her bright century is run,
Be ours to have our children say
Their service is the better done
For that we render her to-day.



Chas. H. Morgan

Men Who Helped Make Worcester

HON. JAMES LOGAN, "Best loved citizen of Worcester," four times mayor of this city, native of Paisley, Scotland, is one of the great industrial leaders of the Heart of the Commonwealth. He has aided in large measure to build up one of its most substantial industries, has risen from humble circumstances to that of wealth and influence, and is now, as he has been since its organization, general manager of the United States Envelope Co.

He delivered an address before the American Society of Mechanical Engineers (Boston section), October 17 last in The Bancroft, in which he spoke of the industrial pioneers of Worcester. The paper is of such excellence, condensed yet possessing all the necessary facts, that we are pleased to make some extracts from it. Ex-Mayor Logan said:

"Many of the industrial pioneers of Worcester did not have a vision of the present industrial life of the city with its population of over 160,000 souls. They could not foresee the telegraph, telephone, wireless, electric light and power, the trolley car, typewriter and camera, and the thousand and one other inventions which go to make up our present complex, industrial life, and which have all come to us during the lifetime of men not yet old. But with the light they had, with the tools they had, they builded better than they knew.

"The studies of grammar, rhetoric, poetry and the ancient classics were formerly referred to as the 'Humanities,' but the true students of the 'Humanities' of our day are the men who are carrying on the work which makes possible the advance of civilization. In their ranks are found the pioneers and path-finders of commercial and industrial progress. They are the builders of railways, bridges, ships, sewers and reservoirs. They are the men who are inventing machinery by which not only the necessities, but the comforts of life are brought within the reach of untold millions.

"Did you ever stop to consider what mental vision is?—that it is not the eye but the mind that sees? The engineer, through the mind, by faith, saw the bridge which spans the mighty river, even before pencil had been put upon paper. In like manner, the inventor sees the perfected machine which is to lighten human toil, and so the bridge and the machine are no longer visions but realities. Then, reaching down below the level of the machine, a thousand or hundred thousand are lifted to a higher level and their labor lighter, not unmixed with joy, takes the place of laborious toil, and the product of their labor by its lower cost of production is brought within the reach of a million souls, and the comforts of life have been multiplied and civilization has taken a step upward to a higher plane by way of the machine.

"Worcester is known throughout the length and breadth of the land as the home of the skilled workman. It is the engineer and mechanic to

William A. Richardson

whom we are indebted for the proud position which our city holds in the Commonwealth and in the Nation. The hum of the machinery made in Worcester can be likened to the roll of Great Britain's drum which follows the rising sun around the circle of the globe. Worcester has done its part in the upward march of progress, for wherever man is found all over the world will be found machinery 'Made in Worcester.'

"When Ichabod Washburn closed his eyes upon the scenes of earth, did he in imagination see the Worcester of to-day and the great American Steel & Wire Co., with its 7,000 employees? I think not. But he helped to lay a foundation which made the American Steel & Wire Co., and many of the other steel and wire industries possible.

"I have not the knowledge or ability to tell you of the great wire industries of Worcester, which supply the wire that takes down from the heavens the wireless message and which also furnish the wire along which your message goes over the mountains and under the seas, by telephone and telegraph around the circle of the globe; which furnish the wire that transmits the electric current that lights your streets and homes, and that propels the trolley which takes you to your business or your home, and that furnishes the motive power which operates our shops; that fences the great ranch in the West or in the Argentine where the cattle are raised, which supply food for our table. It would be impossible to enumerate all the points at which Worcester touches the civilization of the world through the products of the iron and steel industries. My brother was an explorer in South Central America for over 20 years of his life and once having ascended the Magdalena River in Colombia to the foothills of the Andes the thought came to him that probably he was standing where the white man had never stood before, but within a half hour from the time he was thus soliloquizing he discovered a barbed wire fence and on the abandoned reels he found the familiar name of Washburn & Moen Mfg. Co., Worcester, Mass.

"For the manufacture of paper greater power is required and also an abundant supply of pure water, which the roaring, raging Blackstone River at Worcester does not furnish. But, if we may not make the paper, we can render a larger service. We can supply those who do make the paper with the machines to make it, for it requires more ability and a higher degree of mechanical skill to invent and construct the machine than to operate it. It is an interesting fact that in the city of Holyoke alone, which is rightly called the 'Paper City' of America, there are over 60 paper-making machines, and without exception, they could be labeled 'Made in Worcester.'

"To the Rice, Barton & Fales Co., of this city, manufacturers of paper-making machinery is to be given high honor. Their records of the distant past are vague and indefinite, and they do not know how many machines they have made in their seventy-six years of business life.

"But it is estimated that the number of new ones is somewhere between 500 and 700 machines. I might add that they are just shipping to one of the largest paper mills in Maine their 15th machine, making news

print. And it can with truth be said that when the newspaper leaves the mill, it is not yellow but white. It is what the other fellow does to it that makes it yellow.

"I never see one of those great machines, twice the size of the largest locomotive and weighing approximately 600 tons, turning out a sheet of paper from 12 to 15 feet wide and running at a speed equal to 175 miles each day of 24 hours, and the machine as nicely adjusted as the watch you carry in your pocket, that I do not take off my hat to the men who invented, constructed and who operate this mighty servant of mankind, which is 'Made in Worcester.'

"Worcester is the principal home of the envelope industry in the United States. But little did the men who started this great industry appreciate what that business would be in 1913. We do know that the first successful envelope machine in this country, was invented by a physician, Dr. R. L. Hawes, with a mechanical bent, who lived in Worcester and retired from the business with a feeling that the maximum of efficiency had been reached when the product of an envelope machine was 20,000 envelopes per day; and it required three operators to operate two machines, thus giving a product of 13,000 per day for each operator. But the manufacturer who to-day is satisfied with an average product of more than five times that product for a single operator, is not a factor in the present industrial race.

"Our honored friend and fellow citizen, David H. Fanning of the Royal Worcester Corset Co., hale and hearty with his eighty-three years of busy life, is still with us, doing his part, through the industry which he founded, to help make a larger and better Worcester. But when, in those blessed days of smaller things, with two helpers, a man and a woman, he began to make hoop skirts in a room 18 feet by 22 feet, he could not in imagination have foreseen the Royal Worcester Corset Co., of today, where they manufacture jewel cases by the million to hold the finest jewels all over this civilized world.

"It is an interesting fact that while we make in this city of Worcester about every machine used in a woolen or cotton mill, we have few woolen mills and we have not a cotton mill here such as make up the great industries of Lowell, Lawrence, New Bedford, Fall River and Chicopee.

"Another of our honored citizens, Matthew J. Whittall, came to Worcester, bringing with him simply a clear head and willing hands, and, when others in the carpet business had failed of success, he asked for an opportunity to try. Even though his employer, Mr. Crompton, tried to dissuade him, he made the venture. He believed in the old saying:

'He either fears his fate too much,
Or his desserts too small,
Who dares not put it to the touch,
To win or lose it all.'

"He dared to put it to the touch and won, but he could not in those days foresee the great carpet works at South Worcester giving employment to thousands.

"When Henry Graton and Joseph A. Knight started their belting factory in those two little upper rooms on Front Street, with a capital of $800, they did not foresee the mammoth establishment now located on Franklin Street.

"When the two brothers, J. A. and Orlando Norcross, just ordinary carpenters, but exceptional men, took their first contract to build the wooden Congregational Church in Leicester, Mass., they did not see the great Norcross Bros. Co., with an international reputation and with a confidence to undertake the largest construction work conceived by the mind of man. As Orlando once said to me: 'We will undertake to remove the pyramids, Logan, if you will find some one to supply the cash.'

"The work of the Morgan Construction Co., is of international importance, so that wherever the manufacture of steel is carried on, their continuous rolling mills are doing their part to lighten human toil. But little did Charles H. Morgan think, in those early days in the town of Clinton when working on paper box machinery, that he would change his life-work from paper to iron and steel, and that the name of Morgan would be known in the steel industry throughout the world.

"When the Norton Company were laying the foundations of their emery wheel business in that little 12 by 14 foot room with one employee, their honored superintendent, John Jeppson, who is still with them, they did not see a business of international proportions with its 1,700 employees in two continents.

"When the Wyman & Gordon Co., was started in 1883 in that little frame building, 40 by 60 feet, where the two proprietors, both graduates of Tech, shared between them the responsibilities of janitor, fireman, bookkeeper, salesman and engineer, they did not see the evolutionary road which they were to travel, through shuttlebox, binders, loom crank shafts, car coupler knuckles, forgings for bicycles, electric rail bonds, to the automobile crankshaft which was to make them the leaders in this country in the automobile crankshaft industry.

"If you were to journey into the wilds of Patagonia, to the great sheep ranches of the Argentine in South America which supply the world with wool, you will find the Coates Clipper doing its work, and if you go into a barber shop anywhere in the world, you will be likely to get your hair trimmed by a Coates clipper 'Made in Worcester.'

"At the Polytechnic Institute we are taking the raw material and, passing it through the transformer, we are turning out a finished product of high voltage. Our finished product is the technical engineer, the man who can do things, and who does not talk about them but who does the job, who renders service. For over 40 years the Tech has never failed to declare a substantial dividend in the shape of a splendid body of young men who are sent out into the world of business and professional life, not only well equipped from an educational and scientific point of view, but with high ideals of service.

"One of our most permanent institutions in this city is the Tech. The men now connected with it, the firms that now conduct the business of this

Gilbert N. Harrington

growing city, the machinery which sends its product to the ends of the earth will in time, and in a very short time, pass away. A hundred years is a long time even as men count time. Monuments will decay, trust funds will vanish, even our beautiful City Hall and all the buildings on Tech Hill will go the way of all the works of man, but the Tech will remain, its life will probably be longer than any of these things which I have mentioned, and, such being the case, we are to-day planning for this long and, of necessity, larger life for the years that are to be.

"When John Boynton founded the Tech he believed in the future of Worcester, but when he planted that Institution on the Hill he did not foresee the future, but builded better than he knew. He supposed he was founding an institution where the boy who had not received all the advantages might have some of them made up to him; but he never dreamed that he was founding an institution where 'captains of industry,' the commissioned officers, so to speak, of the great industrial army were to be trained, and those commissions were within reach of the sons of the humblest man who walks the streets of Worcester. The Polytechnic Institute is doing the larger work in providing the line and staff officers for the industrial army, and now the city of Worcester, through the Worcester Trade School, is doing the work which Mr. Boynton thought he was providing for, the education of the non-commissioned officers in the army of industry.

"And now, in closing, may I turn your thoughts into another channel? We are living in a busy world and the burdens are many and heavy. Men in business and professional life give up their leisure and practically make themselves slaves to their profession. This is particularly true of engineers. They do this often with the thought in mind that the burden will some day be lighter, and that they will have a larger freedom by and by. They may never have it—they seldom do; for when that day arrives on which they might take that larger freedom toward which, when burdened with heavy cares, they have often looked forward with heavy hearts and longing eyes, they do not want it. Now work has become to them the habit of their lives and they say, as did that great empire builder of Africa—Cecil Rhodes:

'So little done, so much to do.'

The point of view has changed Strength has been given to bear the heavier burdens, and they pray now not for a lighter load but for strength to carry the heavier burden. And here comes in the great compensation of life—that during all the years of strain and strife they have had this larger freedom in expectation, and that, after all, with most earthly possessions is more satisfying than the reality."

Worcester's Railroads

THE FACILITIES provided in Worcester for both passenger and freight transportation is perhaps the chief reason for its present high standing as a manufacturing centre. A city's populace may have inventive genius, skilled mechanics, natural resources and native ability, but without adequate railroad facilities for rapid shipping it is operating under a serious handicap. Worcester, even if it is not a seaport, is well favored. It is on the direct routes from Boston to New York and all points to the West. It enjoys all the benefits of fast passenger and freight trains, and within its radius has one handsome Union Depot, recently erected, and six additional passenger stations.

The Boston Passenger House, the up-town terminal of the Boston & Worcester Railroad, finished in 1835, was situated at the corner of Foster and Norwich Streets and remained in use until the completion of the first Union Station at Washington Square in 1875. This was also the terminal of the first southern railroad, the Norwich & Worcester, completed in 1840, and the first northern railroad, the Worcester & Nashua, completed in 1848. With the completion of those three roads Worcester secured its eastern, northern and southern connections. Its western connections were made when the Western railroad from Worcester to Albany was completed in 1839. The Western railroad was consolidated with the Boston & Worcester, and has since been known as the Boston & Albany.

Another connection with tide water was made when the Providence & Worcester railroad was completed in 1847, but this road had its depot on Green Street, and had no connection with the central station of the other roads only such as was afforded at the Worcester Junction, now known as South Worcester.

The Old Boston Passenger House was for many years the centre of life and activity of the city half a century ago. The popular line of travel between Boston and New York was over the Boston & Worcester railroad to Worcester, then over the Norwich & Worcester railroad to Norwich and then through Long Island Sound by boats of the "Famous Norwich Lines." The Boston passengers, together with those from the north over the Nashua road and the Worcester passengers made up the largest and most important train in its day in New England. When this train with "Jack Hyde" at the throttle pulled out down over the Common back of the City Hall and the Old South Church on its way to Norwich, the sports and characters of Worcester, realizing that it was all off for that day, dispersed into the bowling alleys and dispensaries on Mechanic Street and vicinity, but to repeat the same every week-day evening.

The standard time of Worcester was the large chronometer which stood in the Head House passageway from Norwich Street to the train shed and for many years this time piece was known as "old reliable" by railroad men and the general public.

The Boston and Worcester Railroad, the first in Massachusetts, and one of the oldest in the country, was incorporated June 23, 1831. It had a

single track of 44 miles, laid with edge rails on cast iron chairs, resting on wooden sleepers bedded in trenches filled with stone, and was completed in about four years. The cost of labor, land, engines, cars and buildings was $1,500,000. The first car was a small coach-like affair 20 feet long, holding a dozen people in each of two compartments and entered by a side door. There was a row of seats around the inside, and the conductors passed from car to car by a railing around the outside.

The Western Railroad was completed to Springfield in 1839; from Springfield to Chatham in 1841; there joining the Hudson and Berkshire Railroad, then built, making the complete line from Worcester to Albany in 1841.

There were then five passenger trains and five freight trains daily, east and west.

There are seven Railroad Stations in Worcester as follows:

Union Passenger Station, Washington Square; Lincoln Square Station (B. & M. R. R.), Lincoln Square; Barber's Station (B. & M. R. R.), West Boylston Street; Greendale Station (B & M. R. R.), West Boylston Street; Jamesville Station (B. & A. R. R.), at Jamesville; North Worcester Station (B. & M. R. R.), Holden Street; Summit Station (B. & M. R. R.), Burncoat Street.

The passenger trains now over the Boston & Albany Railroad are:

To the West: 4—New York, 13—West, 15—Local; to the East: 4—New York, 12—Local, 16—West.

There are 25 freight trains each way to-day over the Boston & Albany Railroad and one fast express for the West.

The passenger trains arriving and departing at the depot over the New York, New Haven & Hartford Railroad are: 10 trains to and from Providence, 3 trains to and from New London, 2 trains to and from Putnam, 2 trains local.

There are 15 freight trains each way over the New York, New Haven & Hartford Railroad.

Over the Boston & Maine Railroad there are the following passenger trains daily:

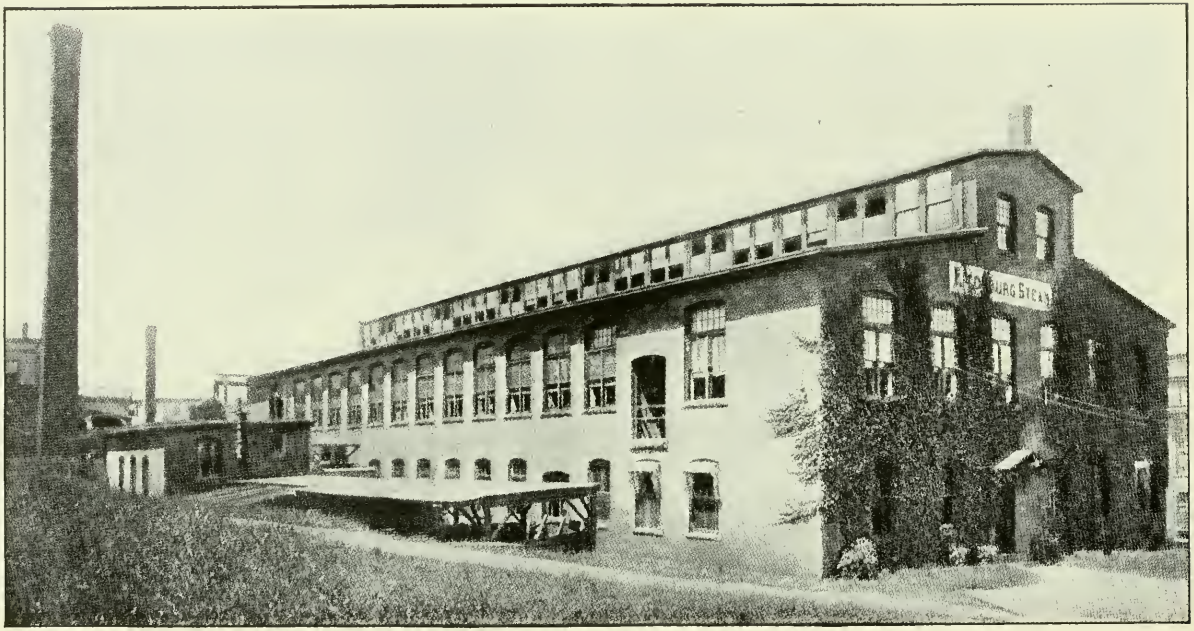
2 to Portland, 5 to Nashua, 1 to Ayer, 13 Locals.

12 Freight trains over the Boston & Maine Railroad, each way to Portland, Nashua, Ayer and local points.

The abolishing of the grade crossings to the north and south of the city—and the latter of which has been accomplished, will probably cost between $4,750,000 and $5,000,000. It is an achievement long wished for by the citizens of Worcester.

The Blackstone Canal

THE BLACKSTONE Canal from Providence to Worcester was completed in 1828. The first boat, the "Lady Carrington," arrived in Worcester, October 6th of that year, and was moored in the basin at the head of that canal. Her arrival was announced by the firing of cannon and the ringing of bells.



Fitchburg Steam Engine Co., Fitchburg, Mass.

President and General Manager, Frederick Fosdick Treasurer and Superintendent, Charles Fosdick Secretary, William J. Clifford

The 40 miles of canal cost about $700,000. The enterprise proved unprofitable to stockholders owing to the adoption not long afterward of the railroad system of passenger and freight transportation The last toll on the canal was collected November 9, 1848.

Worcester's Trolley System

THE APPROXIMATE number of miles of street railway tracks in Worcester County is 390. This trolley system connects Worcester with a population of nearly 400,000 in Worcester County.

The first horse car run in Worcester was in 1861, the route being from Lincoln and Catherine Streets to Webster Square. This company was known as the Worcester Horse Car Company. The company operated for about two years and became bankrupt and no cars were run for about two years more, when a new company was organized and operated. Horse cars were discontinued about November 1, 1893.

The first electric car was run in Worcester Feb. 22, 1887. This car was operated over the narrow guage railroad from Washington Square to Lincoln Park at Lake Quinsigamond by Horace G. Bigelow. It was not a success and operated only a very short time.

The first successful electric car was run in Worcester on the Lake line from Shrewsbury and Mulberry Streets to Lincoln Park during the first week of August, 1891. The car was operated by the Worcester Consolidated Street Railway Company. The Spencer line was opened as an electric line August 10, 1891.

Worcester's trolley system is regarded by world travelers as one of the best equipped and safest of any city of importance in the United States.

Worcester's Banking Business

WORCESTER possesses a sound and reliable number of banking institutions. There are three national banks, one trust company, five savings banks, four co-operative banks. The aggregate deposits of the three national banks and trust company January 4, 1914, were $24,605,827.29.

The deposits October 31, 1913, of the Worcester Savings Banks were as follows:

Worcester County Institution for Savings	$24,340,141.19
People's Savings Bank	15,216,864.01
Worcester Mechanics Savings Bank	13,984,798.52
Worcester Five Cents Savings Bank	12,505,569.62
Bay State Savings Bank	1,930,354.06
Total	$67,977,727.40

Worcester Polytechnic Institute

The monthly clearings of the local banks for 1913 were:

January	$12,035,934
February	11,152,333
March	11,472,016
April	11,902,125
May	11,335,874
June	11,028,495
July	11,701,125
August	10,430,982
September	10,451,959
October	13,364,863
November	10,452,657
December	11,216,650
Total	$136,545,013

Co-operative bank assets:

Total Assets of the Worcester Co-operative Bank	$1,051,750.72
Total assets of the Home Co-operative Bank	1,041,596.51
Total assets of the Equity Co-operative Bank	1,028,767.13
Total assets of the Independent Co-operative Bank	22,000.00
Grand total	$3,144,114.36

The above figures speak for themselves so far as Worcester's banking business is concerned.

Worcester's Schools for Engineers and Mechanics

WITH THE splendidly equipped Technical and Trade schools with which Worcester is provided, there seems no reason for pessimism in regard to the future supply of first-class mechanics to maintain the industrial supremacy of Central Massachusetts. That much ought to be assured, from what may be expected of the graduates from the Tech and the Worcester and Fitchburg Trade School plans.

Worcester Polytechnic Institute

THERE IS AN exceedingly close and intimate relationship existing between the Worcester Polytechnic Institute and the Machine Shops of Worcester County. It is this: Those who have graduated from the Tech are now, very many of them, in the Worcester machine shops, and those who are in the Tech now, will soon be graduating into the machine shops. In fact, quite a number of the grads are the owners of machine and electrical shops in this city, and the same is true of some who were professors on Boynton Hill. As has been stated, many of the young men who received their first real training in shop practice,

mathematics, machine construction, materials, drawing, patternmaking, and the many component parts which go to make up an all-round engineer at the Tech, are now in charge of the great machine making factories of Worcester, and managing them with entire satisfaction and to the credit of their alma mater.

The Worcester Polytechnic Institute was founded by John Boynton, of Templeton, a few miles from the Heart of the Commonwealth, the letter of gift declaring his intention being dated May 1, 1865. It was a gift of $100,000 in securities, and with that for a starter the Institute opened for business November 12, 1868.

The Washburn Shops were founded by Ichabod Washburn in a letter of gift dated March 6, 1866. Mr. Washburn erected the original shop building and gave an endowment to the shops of $50,000. The group of buildings now consist of Boynton Hall, Washburn Shops, Power Laboratory, Engineering Laboratories, Salisbury Laboratories (a gift of Stephen Salisbury), the Foundry, Electrical Engineering Laboratories, Magnetic Laboratories. The valuation of the buildings and land is about $587,000, the land being valued at about $125,000. The Hydraulic Testing Plant is situated at Chaffins, five miles distant.

The buildings and land comprise 53 acres, six of which are to be devoted to the Alumni Athletic Field, now nearing completion.

The Electrical engineering building is the largest devoted exclusively to electrical engineering to be found in any college. The school is one of the first of its class in the country, and it has kept pace with the tremendous progress made during the past quarter of a century in all matters pertaining to professional and technical education. In some respects it has been recognized as a leader, and its methods extensively copied.

In a very broad and general sense engineering has been defined as "the application of practical science to man's material circumstances and means of action," but in a more common and technical sense it means the utilization of the forces of nature in the service and for the benefit of man, as illustrated in the construction and use of machinery, the erection and maintenance of structures and the discovery, decomposition and recomposition of the component parts of material things. To portions of the wide field thus described, the terms mechanical, civil, chemical and electrical engineering have been applied. Under each of these there is much opportunity for specializing. Mechanical engineering has been defined as that branch of engineering which relates strictly to machinery, such as steam engines, machine tools, millwork, etc., but it is evident that a mechanical engineer may restrict his field to any one of these, or to machinery for the production and utilization of electricity. And so there are also sub-divisions of the other subjects.

In the use of a workshop as furnishing an essential part of the training of the mechanical engineer, the Worcester Tech was the pioneer in the United States, and its facilities for this training, as embodied in the Washburn Shops, are probably more extensive than in any other.

This institution was the first, as has been said, to establish these

shops as an adjunct to the training of the engineer. They exist only that they may contribute to that training in the highest degree possible.

The scope of this school's work is more comprehensive than in a few schools which are restricted to a single branch of engineering, and it is more limited than in others which attempt to include nearly every department of applied science.

The courses are mechanical engineering, civil engineering, chemistry, general science, electrical engineering, all leading to the degree of Bachelor of Science and graduate courses in each department are offered, leading to the advance degrees of M. S., D. S., M. E., C. E., and E. E.

Ira N. Hollis, formerly of Harvard, is President of the Institute, while the president of the Board of Trustees is Hon. Charles G Washburn, who is also connected with The Wire Goods Co. President Hollis is supported by a large and exceedingly capable faculty.

The student body now numbers 535, of which the city of Worcester furnishes 110, the County of Worcester, 89, the State of Massachusetts, not including Worcester, 151; outside of Massachusetts, 174 and 11 foreign.

The number of students which have been graduated is 1,657, of whom 1,538 are still living.

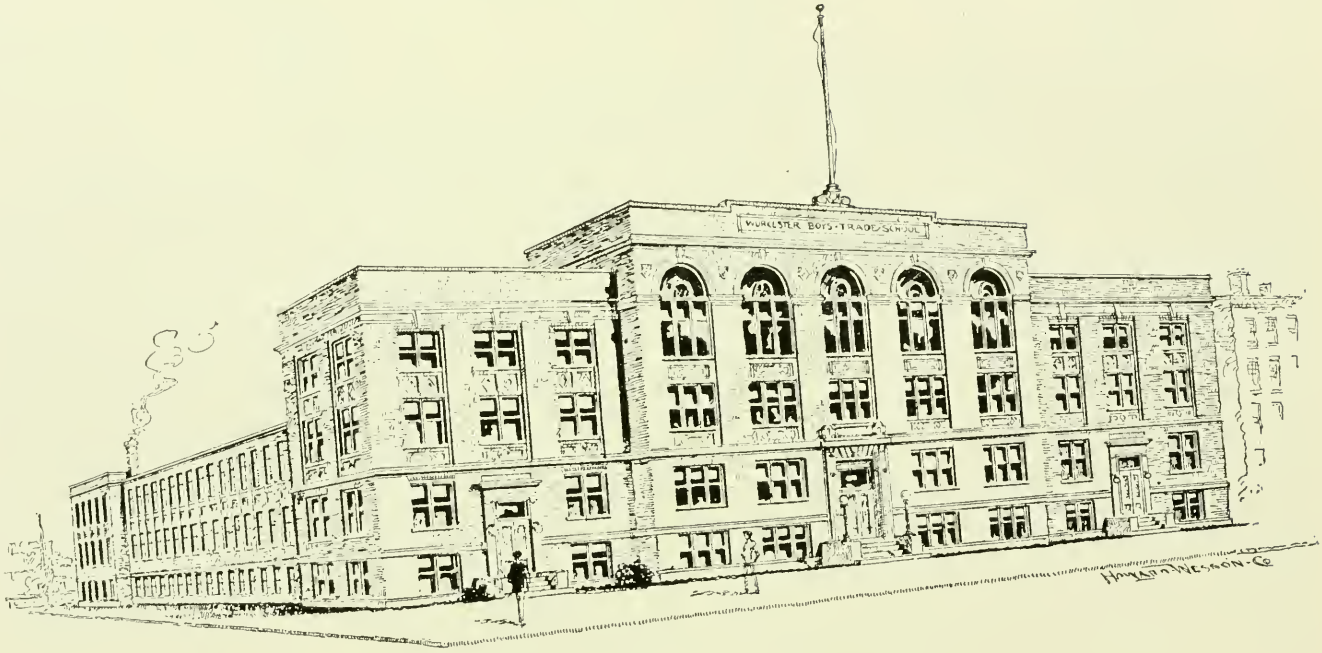
Of these graduates, 72 are either owners, part owners, or occupying executive positions in connection with shops of the National Metal Trades Association. Here is a list of some of the graduates of Worcester Polytechnic Institute:

Charles G. Washburn, The Wire Goods Co., Worcester.
Paul B. Morgan, Morgan Construction Co., Worcester.
James N. Heald, Heald Machine Co., Worcester.
Lyman F. Gordon, Wyman & Gordon Co., Worcester.
William F. Cole, Baldwin Chain & Manufacturing Co., Worcester.
Victor E. Edwards, Morgan Construction Co., Worcester.
Aldus C. Higgins, Norton Co., Worcester.
Albert J. Gifford, Leland-Gifford Co., Worcester.
John W. Higgins, Worcester Pressed Steel Co., Worcester.
Eugene A. Copeland, Hobbs Manufacturing Co., Worcester.
Theodore H. Nye, Morgan Construction Co., Worcester.
R. Sanford Riley, Norton Co., Worcester.
Subbo Nikiloff, Leland-Gifford Co., Worcester.
A. N. Goddard, Union Twist Drill Co., Athol.
George S. McFarland, Wyman & Gordon Co., Worcester.
Norman F. Holter, Norton Co., Worcester.
George S. Holden, Eastern Bridge & Structural Co., Worcester.
John C. Spence, Norton Grinding Co., Worcester.
George G. Whitney, Heald Machine Co., Worcester.
Clayton O. Smith, Norton Grinding Co., Worcester.
H. P. Sawtell, Leland-Gifford Co., Worcester.
Lester H. Carter, Baxter D. Whitney & Son, Winchendon.
Edwin G. Chaffin, Norton Co., Worcester.

Lapointe Machine Tool Co., Hudson, Mass.

President and General Manager, Walter F. Rice Treasurer, Joseph F. Owens Secretary, William P. Evarts

Arthur A. Arnold, American Optical Co., Southbridge.
Frank L. Putnam, Harrington Cutlery Co., Southbridge.
Albert G. Belden, Norton Grinding Co., Worcester.
Waldo J. Guild, Heald Machine Co., Worcester.
Don A. Hamilton, Manning, Maxwell & Moore, New York.
Charles E. Gillett, Norton Co., Worcester.
William T. Donath, Leland-Gifford Co., Worcester.
Paul R. Crooker, Norton Grinding Co., Worcester.
George F. Martin, Eastern Bridge & Structural Co., Worcester.
H. M. Carleton, Economic Machinery Co., Worcester.
Edward M. Woodward, Jr., Woodward & Powell Planer Co., Worcester
Edward H. Moore, Eastern Bridge & Structural Co., Worcester.
Howard P. Chace, Norton Grinding Co., Worcester.
C. W. Phillips, Heald Machine Co., Worcester.
Ephraim Currier, Harrington & Richardson Arms Co., Worcester.
Fred W. Eastman, Norton Grinding Co., Worcester.
William W. Armour, Armour's Pattern Shop, Worcester.
George H. Day, American Optical Co., Southbridge.
W. C. Searle, Norton Grinding Co., Worcester.
Willard T. Hatch, Brown & Sharpe Manufacturing Co., Providence.
George H. Cushing, H. B. Smith Co., Westfield.
W. W. Estes, General Fire Extinguisher Co., Providence.
Harry N. Harding, Norton Grinding Co., Worcester.
Fred D. Holdsworth, Sullivan Machinery Co., Claremont, N. H.
John G. Aldrich, New England Butt Co., Providence.
A. M. Powell, Fitchburg Machine Works, Fitchburg.
T. S. Miller, Lidgerwood Manufacturing Co., New York.
Roger B. Hubbell, Norton Grinding Co., Worcester.
R. S. Squire, Stevens-Duryea Automobile Co., Chicopee Falls.
James G. Goodell, General Fire Extinguisher Co., Providence.
Alfred E. Rankin, Lidgerwood Manufacturing Co., New York.
John W. McCaffrey, Taft-Pierce Manufacturing Co., Woonsocket.
S. W. Sparrow, Stevens-Duryea Automobile Co., Chicopee Falls.
Stanley P. Stewart, Stewart Boiler Works, Worcester.
Howard E. Stowell, Carborundum Co., Niagara Falls, N. Y.
C. W. Taft, Leland-Gifford Co., Worcester.
Lester H. Greene, Brown & Sharpe Manufacturing Co., Providence.
James P. Hogan, Union Twist Drill Co., Athol.
Waldo L. Sherman, Reed-Prentice Co., Worcester.
James W. Armour, Armour's Pattern Shop, Worcester.
Bryant F. Chapin, Norwood Engineering Co., Florence.
Edgar F. Tierney, Builders Iron Foundry Co., Providence.
Elmer S. Whittier, Sullivan Machinery Co., Claremont, N. H.
Frank B. Knight, Chicago Office, Lidgerwood Mfg. Co., New York.
Charles C. Brooks, Assistant Western Manager, Mead-Morrison Co., Boston.
Charles H. Greenwood, The Carborundum Co., Niagara Falls, N. Y.



Worcester Boys' Trade School

William J. A. Rankin, Lidgerwood Mfg. Co., New York.
Howard T. Walsh, Sullivan Machinery Co., Chicago.
Elmer H. Fish, Worcester Trade School, Worcester.

Worcester Trade School for Boys

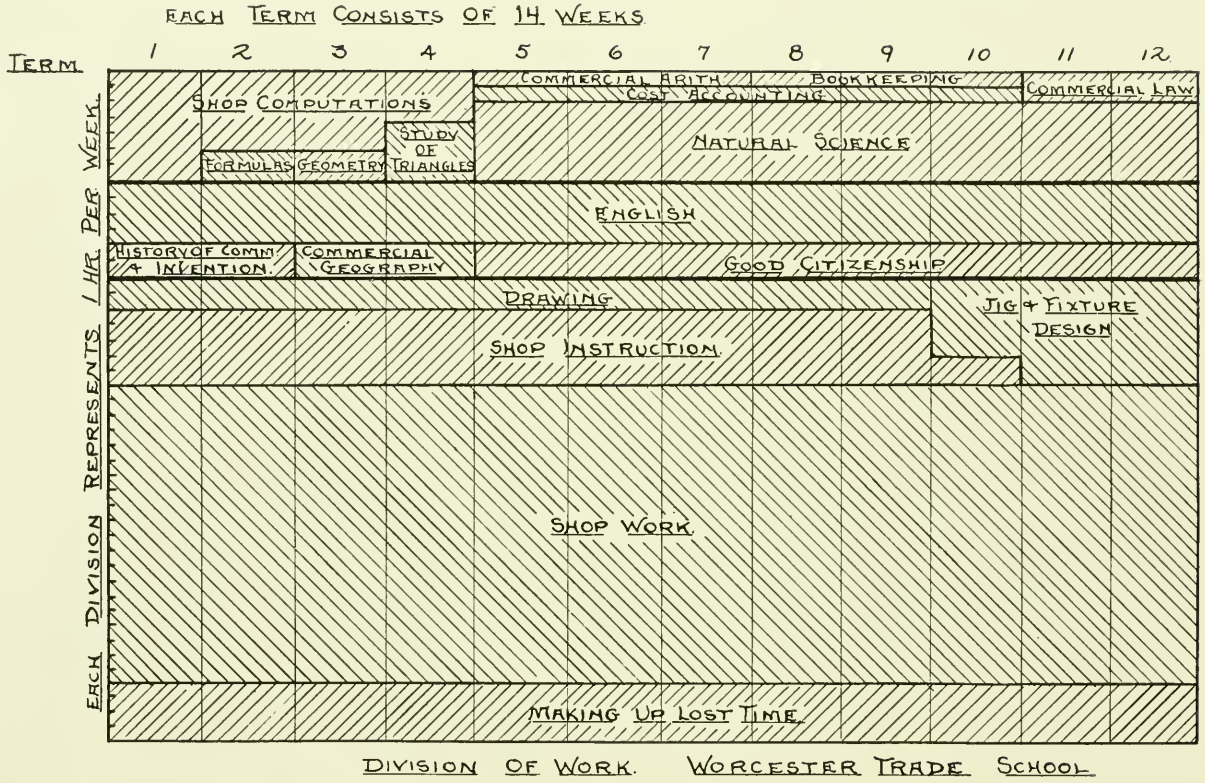
ONE OF THE live questions of the day is that of the recruiting of the skilled industries with workers. Operatives can be obtained in considerable numbers and their training on the job is not a difficult matter, but every shop must have a larger or smaller group of men possessed of mechanical skill and ingenuity.

Worcester owes its existence primarily to such men. Without Washburn, Crompton, Wheeler, Hildreth, and many others of equal prominence, there might never have been a city in the Heart of the Commonwealth. For a great many years Worcester made its mechanics and asked no aid from outside. Then it gradually lapsed into the easy way of getting its skilled workmen from neighboring cities and later from abroad, until to-day the workman who served an apprenticeship in Worcester is nearly extinct.

Some eight years ago a few men, led by Milton P. Higgins, who were vitally interested in this matter, both personally and in the interest of the city, set out to see what could be done to better conditions. Without going into details, the result is seen in the Boys' Trade School at Armory Square, and of equal importance in another direction, the Girls' School on State Street.

The Worcester Boys' Trade School was one of the first Masschusetts Industrial Schools to open its doors and is now by far the largest in New England. It was authorized by city ordinance December 31, 1908, and the first building was opened to pupils February 9, 1910. Four years of growth shows a membership of 400 full time day pupils and nearly 800 men in the evening classes, of whom the latter are employed in local industries, but come to school in the evening to get further practical training in their trades. In this respect this school differs from many of the evening schools in other cities. There the evening work is largely book work in the allied sciences which is apt to educate the mechanic away from his trade rather than to build him up in it. In this school it has been found possible to secure as instructors men who are known in the local shops as leaders in their respective trades and who train their men on actual work and along lines which they find it difficult to get opportunity to practice where they are employed. For example, a man whose work in the shop is exclusively on a lathe may see an opportunity for a better job if he can learn to run a planer or a shaper. If so, he can get training and experience evenings in the trade school shops on the most modern machine tools.

The day pupils are learning these trades of machinist, pattern maker, cabinetmaker, carpenter, power plant operator, drawing, both mechanical and for the building trades, and printing, all of the courses being four years in length.



DIVISION OF WORK. WORCESTER TRADE SCHOOL

The machine shop is exceptionally well equipped with lathes, planers, shapers, millers, grinders, etc., of the best makes. Much of this equipment has been obtained by exchange with prominent machine tool builders in all parts of the country. It has been paid for in work done by the pupils, who have made large quantities of gears, tool posts, shafts, mandrels, arbors, etc. This is an especially valuable way of getting both equipment and work because it affords an outlet for the product which does not disturb the labor market, it makes it possible to keep the equipment up to date and it makes certain that the work will be kept up to the commercial standard.

Wood working is practiced along the lines of carpentry, cabinet making and pattern making. The equipment is only second to that in the Machine shop. Hand work enters into all of these trades to a larger extent than in machine work, but even with that handicap the boys do some of the most excellent work, as is evidenced by the fine quartered work panelling in the corridor and office of the new building.

The boys in the power plant department have done all the piping for the heating of the new building and all of the electric wiring for the light and power. They have also rebuilt a number of steam and gasoline engines for use in the school laboratories.

The division of studies is shown by the accompanying diagram which indicates the average time each week, including study, that is given to each subject.

To briefly review these studies it may be said that "shop computations, formulas, geometry and study of triangles" comprise work in the application of only a few very simple mathematical processes to actual shop conditions. The work is very largely drill in practical problems, several thousand such problems having already been gathered. Commercial arithmetic and commercial geography deal with the transportation, purchase and sale of materials and products. The study of geography is made directly from way bills loaned by the railroads.

Natural science deals with the problems in mechanics, hydraulics and electricity with which the workman in a shop may expect to come in contact.

The cultural side of the boys' education is provided for in the work in English, history of commerce and invention, and good citizenship, though even in these subjects use is made of the practical application of each study so far as possible. In English, shop reports are made of each week's shop work which are criticised by a shop man, and a portion of their reading is taken from the technical papers of their trade. The history of commerce and invention is directed largely toward the rousing of the ambition of the young man by showing him the successes that have been made in the past by shop trained men. Good citizenship is based largely on the experiences of the boy in the shop, and is made to grow out into the relations of the shop to the economics and government of the outside world.

Drawing is taught from the start by the methods prevailing in drafting rooms and is intended to give the pupil, not skill as a draftsman, but facility in sketching and in reading drawings. Drawings for use in the shop are

made in the drafting room by pupils who are either scheduled for shop work or shop instruction. It is intended that drawings shall be made by one boy, checked by another and used by others, in order that their inaccuracies may be brought forcibly to the attention of the draftsman.

Since October, 1910, the school has been open to pupils on the half time plan. The regular schedule of the school sends each pupil into its shops for a full week and then the next week into its school rooms. During this time other boys alternate with this first division so that the shops and schools are full all the time. The half time pupils take exactly the same course as the full time pupils except that they go to outside shops, which pay them apprentice wages, to get their shop training. This course has been open for upward of three years not only to boys newly entering the school but to all the boys in the school. There has never been a time but that boys could be readily placed in shops on this plan, nevertheless there have been very few pupils who desired to take advantage of the opportunity. The largest number at any one time has been nine, the smallest three. At the same time that halftime class was opened, a continuationclass was begun for apprentices. This class meets Saturday mornings from 8 to 12, when the pupils are given instruction in drawing, or if desirable, English and mathematics and science, or they are taken into the school shops and given instruction in the operation of specific machines. This class fluctuates, between 15 and 30 apprentices having taken advantage of it.

The only requisite for admission to either class is that the pupil must be over 14 years of age and be vouched for by his employer.

Twenty-six boys, the first class, were graduated in June, 1913. They were immediately placed at an average wage of $2.25 per day, many of them in shops where they had worked previous summers. For the most part they have remained in Worcester, only two having gone out of the city even through the slack times.

The buildings and equipment have been furnished by the city, the cost of maintenance is shared equally by the city and state. The buildings, equipment and stock in hand, inventory $225,000 of which $25,000 represents gifts toward the building fund from the estate of Milton P. Higgins, $3,000 supplementary gifts from other citizens, and about $25,000 from the work of the pupils.

The school has at all times stood for practice along strictly commercial lines on the score that the most important thing in industrial education is that the pupil shall be taught to do work in a way and of a quality that will be accepted when he graduates. It has been found entirely possible by careful instruction to turn out work which is accepted gladly by some of the best known shops in the country. If the school has shown one thing, it is that trades can be taught more efficiently in a school organized for that purpose than in shops organized for profit where the foreman's first duty is to get work out of men rather than to get training into them.

On the other hand, there is no neglect of the boy as a citizen and a member of the community. All of a high school education that makes for generally useful all around development is retained. Mathematics, science,

English, history of commerce and invention, civics, drawing, all have their place in order that the graduate may have a broadening outlook on the world.

Louis H. Buckley succeeded Milton P. Higgins as president of the board of trustees, and Elmer H. Fish has been director of the school since the beginning, in 1909.

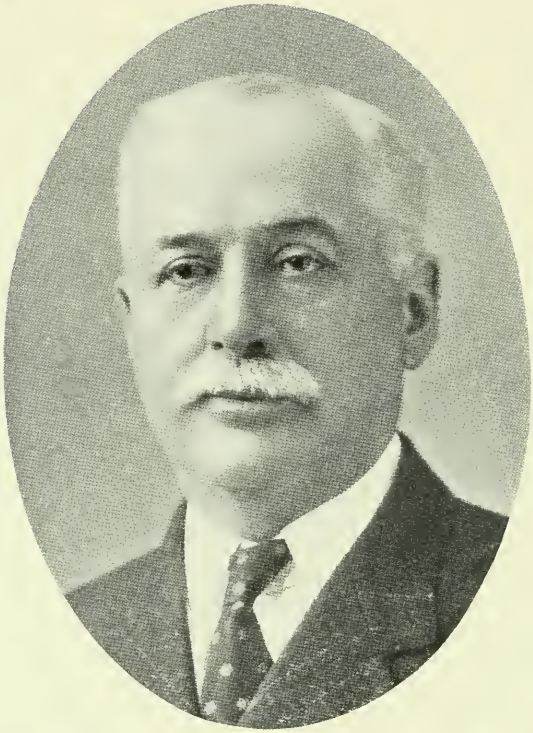
Fitchburg Plan of Co-operative Education

A SPLENDID plan of co-operative work, fashioned after that adopted by the University of Cincinnati, led by Professor Herman Schneider, for the benefit of the young men of Fitchburg, was inaugurated six years ago by the members of the Worcester Branch, National Metal Trades Association, who are located in Fitchburg.

Dean Schneider was one of the speakers at the Annual Convention of the National Metal Trades Association in Hotel Astor in April, 1908. He related in stirring words the splendid work being accomplished by the University of Cincinnati in conjunction with the young men and the employers in the metal trades lines of that city. Among those present at the convention as a member of the Worcester Branch was the late Daniel Simonds, of Fitchburg. He realized that there was an opportunity for the young men of Fitchburg to acquire an academic and mechanical training at the same time through the agency of the Fitchburg High School. Along with his associates in the metal trades lines in his city, working with the school committee, the matter was considered on his return from the convention. Everybody in Fitchburg was as enthusiastic as Mr. Simonds, and by August 1, the same year, the plan was fully launched, under the superintendency of W. B. Hunter.

The scheme, as stated, provided an opportunity for learning a trade and obtaining an education at the same time. This is accomplished by spending alternate weeks in the shops of the city and the high school as an apprentice in the following trades: Machinist, pattern making, saw-making, drafting, iron molding, tinsmithing, piping, printing, textile and office work, at the works of the Bath Grinder Co., Blake Pump & Condenser Co., Brown Engine Co., C. H. Cowdrey Machine Works, H. M. Downs Printing Co., L. H. Goodnow Iron Foundry, The Jennison Co., Fitchburg Machine Works, Fitchburg Steam Engine Co., Grant Yarn Co., G. M. Parks Co., Parkhill Manufacturing Co., Putnam Machine Works, and the Simonds Manufacturing Co.

The course is of four years' duration, the same as the regular high school course. The first year the pupils spend wholly in school and the next three years alternate weekly between shop and school. A trial period of two months, beginning at the end of the first school year, is given each candidate to see if he is adapted to the particular trade he elects, and his parents sign an agreement whereby the apprentice agrees to complete the full course; and the manufacturer, on his part, agrees to teach him the rudiments of the trade as designated in this agreement.



Daniel Simonds

Allotment to the various shops is made in June by the director of the course, and, as far as possible, the desires of the boy as to the shop he prefers are met.

Wages are paid for shop work at the following rates: First year, 10 cents an hour; second year, 11 cents an hour; third year, 12½ cents an hour; making a total of approximately $550 for the three years of shop work.

The class is now on its sixth year, having graduated three classes, numbering 50 pupils.

The Fitchburg Plan contemplates taking care of any trade or vocation that the community offers for boys or girls to work at. It is planned to take up the building trades, agriculture and women's occupations just as soon as the demand for them is made.

This, then, is the Fitchburg Plan of Industrial Education, the first public school idea in the country to really care for the needs of the mechanic and furnish him with such an equipment that on graduation from the high school he is a bread winner, with a place in the ranks of the world's busy workers.

As an illustration of the class of work given the boys, the shop course of six of the trades, together with a suggestion of the school work correlated, is given below:

Machinist Trade

Shop Work—Starting, running, cutting off machines; chipping or rough filing castings; tapping, hand reaming and burring; rough lathe work, turning stock oversize for finisher or grinder, boring, polishing and hand milling; lathe practice with increased accuracy, using micrometers, taper turning, thread cutting; drill press, laying out holes, use of jigs, tapping, reaming, lapping, planer or shaper—methods of strapping work on table, rough planing finishing, taper work; grinding of tools—planer, lathe, drill—both by hand and machine; grinding machine operation, external and internal work, wet and dry, use of magnetic chuck; setting up, floor work, fitting parts, fitting keys; milling machines—plain milling, form cutters, indexing, iron and steel parts, jigs and fixtures; boring mill, drafting room. In shop work use blueprints for directions.

Correlated School Work—Complete analysis of shop tools and operations; freehand sketching with dimensions from machine parts, followed by mechanical drafting of same, throughout the four years of the course; shop figuring, gearing, screw cutting, speeds, feeds, belting, chain drive; properties and chemistry of metals; steam engines; physics, elementary applied mechanics; electrical drive and apparatus; English, description of shop processes and machinery; precision measurements and instruments; geometry and trigonometry used in shop work.

Let me but do my work from day to day
In field or forest, at the desk or loom,
In roaring market place or tranquil room;
Let me but find it in my heart to say,
When vagrant wishes beckon me astray,
"This is my work; my blessing, not my doom.
Of all who live, I am the only one by whom
This work can best be done in the right way."

—*Henry Van Dyke*

Draftsman

Shop Work—Tracing, blue printing, lettering, detailing, simple design from foreman's sketches, changes, measuring shop tools for alterations, jig design.

Correlated School Work—Drawing and free-hand sketching, drawing room procedure; methods of representation, strength of materials, properties and chemistry of metals; English, descriptive work and processes; analysis of shop tools; pattern making; chemistry and physics, same as machinist; geometry and trigonometry to solve gearing and stress problems.

Molding Trade

Shop Work—Mixing sand; coremaking, heat ovens; helping floor molders, ramming molds, pouring light parts, molding simple pieces, increasing in complexity.

Correlated School Work—Chemistry of iron, chemistry of sands, physics; shop tools and operations; core ovens and making, venting, gases, mathematics.

Patternmaking Trade

Shop Work—Kinds of stock; use of saws, planers, sanding, gearing, lathes; turning, chuck work; solid work; built up patterns; loose pieces; core prints and boxes, pulleys and gears; working from blueprints.

Correlated School Work—Drafting, gearing, mathematics; machine shop and molding processes; cutting tools, saws, planers, properties of wood, "draft," fillets; chemistry of iron, glue; physics, same as machinist.

Sawmaking Trade

Shop Work—Gauging stock; punching and reaming arbor holes; grinding to thickness and clearance; hammering to clear lumps and straighten stock; hammering after hardening for tension according to use of saw; blocking or final finish.

Correlated School Studies—Properties of steel; chemistry and physics as for machinists; hardening and tempering processes; precision measurements.

Sheet-Metal Trade

Shop Work—Helping journeyman; cutting off stock; bending and crimping; soldering and hammering; sheet iron, steel, copper work; making ventilators, cornice work and odd jobs; laying out sketch as design of ventilators.

Correlated School Studies—Sheet-metal drafting; iron and steel properties; chemistry of metals, solders, gas appliances; physics, mechanics; practical geometry; heating and ventilating; cutting tools.

Chas. F. Putnam

H. O. Putnam

Worcester Trade School for Girls

THE TRADE SCHOOL for Girls in Worcester was opened September 20, 1911, with an enrollment of 75 girls. The first director was Miss Cleo Murtland, a former instructor in the Manhattan Trade School for Girls in New York. Under her supervision the equipment was selected, repairs to Newton Hall, the old Wetherell estate, which was leased for five years, carried out, and the curriculum outlined. She arrived in Worcester in July and interviewed prospective pupils and their mothers.

Much of the furniture such as desks, tables, chairs, etc., was made at the Boys' Trade School and these have been added to with the growth of the school.

The Trade School for Girls was designed specially to prepare girls to fill positions in the various manufacturing plants and stores of Worcester. It is not a copy of any other school, but a training school to turn out expert workers in various trades, thus giving the pupils a solid foundation from which to advance to prominent positions which they could only reach under great handicaps if picking up the trade with no individual teaching in the shops and factories.

The trade courses are plain sewing, by hand and machine, fine sewing and embroidery, plain dressmaking, advanced dressmaking, making of fancy afternoon and evening gowns of silk and lace, broadcloth, chiffon, voile.

Millinery—making of wire and buckram frames, making of bandeaux, folds, bindings, making fancy trimming and novelties, and the trimming of hats.

Electric power—machine operating, special machine work, buttonhole machine, use of two needle gauge, machine for corset work, use of knife tucker.

Academic work—so that girls may be proficient in arithmetic, English, geography, and spelling for successful trade work. They are instructed in the knowledge of textiles, and writing, business forms and composition; study of weaves, qualities, adulterations; industrial history and geography as related to women's work; apportionment of income, expenditure.

Art Course—applied design, costume designing, designing of hats.

Cooking Course—buying, preparing, serving of food for the school luncheon, planning simple menus, canning and preserving, elementary food chemistry.

Besides these courses there are taught light gymnastics, dancing, personal hygiene, care of the eyes, teeth, the throat and ears, and also corrective exercises are given.

The conditions for admission in brief are that the girl be 14 or over, in good physical condition and can show an aptitude for handiwork. Girls who have completed the work in the grammar school are admitted in full standing; those who have not, have to take a course of a month to show an ability to use intelligently the academic branches. The present teacher is Miss Helen R. Hildreth.

Clark University

Worcester's Higher Institutions of Learning

Clark University

JONAS G. CLARK, after whom Clark University and College are named, endowed these institutions to the extent of $4,000,000. A provision was made in that amount that a University Library should be established, and he bequeathed it $800,000. It is regarded as one of the best endowed university libraries in the United States. There are 66,000 volumes on the library shelves and this number is increasing annually at the rate of 4,000 in addition to 450 periodicals. The University Library is particularly strong along scientific lines.

The University was opened in 1889 with Dr. Granville Stanley Hall as president and he fills that chair at the present time. The first step towards the realization of his long formed plans was for Mr. Clark to invite the following gentlemen to constitute a board of trustees: Hon. Stephen Salisbury, Major-General Charles Devens, Hon. George Frisbie Hoar, Hon. William W. Rice, Dr. Joseph Sargent, Hon. John D. Washburn, Frank P. Goulding and George Swan. This board of trustees was incorporated in March 1887.

During the previous five years Mr. Clark had gradually acquired a tract of land comprising about eight acres, located on Main Street, a mile and a half from the heart of the city. Plans for the main building were submitted to the board by Mr. Clark, which were approved and its erection was at once begun. The cornerstone was laid with impressive ceremonies October 22, 1887. This building is 204 x 114 feet, four stories high and five in the centre, constructed of brick and granite and furnished throughout in oak. It contains 90 rooms; a clock with a six foot dial in its tower, presented by citizens of Worcester.

The letter inviting Dr. Hall to be the first president April 3, 1888, gave expression to the spirit animating the trustees as to the purpose of the University:

> "They desire to impose upon you no trammels; they have no friends to provide for at the expense of the interests of the institution, no pet theories to press upon you in derogation of your judgment, no sectarian tests to apply, no guarantees to require, save such as are implied by your acceptance of this trust. Their single desire is to fit men for the highest duties of life and to that end, that this institution in whatever branches of sound learning it may find itself engaged, may be a leader and a light."

The invitation was accepted May 1, and the president was at once granted one year's leave of absence with full salary to visit the Universities of Europe. On that trip he sought information from every source. Books, reports, and building plans of many kinds were gathered. Ministers of education, heads of universities and leading scientific men were visited. During his absence, the chemical laboratory building on the corner of Maywood and Woodland streets was erected from plans by a young engineer under Mr. Clark's direction.

At the opening exercises of the University, October 2, 1889, the founder stated his purpose. The exercises were held in the hall of the University, seating 1,500 people, the late General Devens presiding. Its chief purpose is original research and it has given to the world much valuable knowledge as the fruits of the work of man specialists. The leading consideration in all engagements, reappointments and promotions has always been the quality and quantity of successful investigation. That has given the work a unique character, and as the work was of such magnitude and importance, Mr. Clark urged the president, trustees and faculty to go slow.

But for the founder who could not understand these ideals and who gave no intimation of his real wealth, with a faculty of very earnest and very ambitious scientists, with an income that did not cover the salary list, serious difficulties and misunderstandings were inevitable.

Dr. Hall realized that the splendid opportunity was jeopardized by this over caution of the founder. In a report he said: "Perhaps none of us will ever again see an opportunity so precious and, for a movement in the field of highest education in this country, of great historic and national significance. While, however, we must go slowly, we cannot afford to go too slowly. The present opportunity is without precedent in our educational history."

Lack of frankness and lack of funds brought about strained relations between founder, president and faculty which culminated in the resignation of a number of the latter in the summer of 1892.

Every member of the staff of 1892 stuck to his post in spite of offers, in many cases of more lucrative positions elsewhere, for the next 21 years, when Dr. Clifton F. Hodge, professor of biology, broke the tradition by resigning to enter a larger field of work in the state of Oregon.

With the increased resources since the death of the founder and his wife, the University has grown. The department of chemistry has been reopened. Departments in history, economics and philosophy were added. Two new buildings have been erected. Degrees conferred by the University are Master of Arts and Doctor of Philosophy.

The University now consists of four buildings. Of the two main buildings the principal one is where the classrooms and offices are situated, and the other the laboratories for the teaching of physics and chemistry. These two buildings cost $350,000 while the two library buildings cost $225,000 additional, making a total in buildings alone of $575,000.

The librarian is Dr. Louis N. Wilson. He has filled that position for 25 years most acceptably. This splendid service to Clark was suitably

celebrated and recognized a few weeks ago by the faculty and student body of the University and College.

Jonas Gilman Clark

Jonas Gilman Clark, founder of Clark University, was born in Hubbardston, February 1, 1815, and died at his beautiful home on Elm Street, Worcester, May 2, 1900, at the age of 85. He worked on his father's farm until he was 16, attending the country school for a few weeks each year.

In 1831 he began to learn the carriagemaker's trade and set up on his own account when he came of age. In 1845 he established a shop for the manufacture of tinware, opening stores, later in Lowell and Milford, adding hardware and building material to the stock.

In 1853 he went to California shipping from the East provisions, furniture, miners' supplies and farming tools.

In 1856 his business had resolved itself entirely to furniture, of which he supplied the larger part of the wholesale market of the Pacific Coast for four years. In 1860, being in poor health, he sold out his business, invested his money in land and left for Europe.

Returning to San Francisco he took an active part in founding the California Council of the Union League of America holding the office of grand treasurer until he removed to New York, May, 1864.

Retiring from business at the age of 45, Mr. Clark devoted his leisure to intercourse with men, travel and books. His interest in education began in his love for books so that his library may be said to represent the early stage of his first idea of a university. It is certain that in his later years as a book buyer, he was under the firm impression that he was collecting a library that would be invaluable to the university he contemplated founding, and it was a keen disappointment to him when he slowly learned in the first stages of its development, that a university library was entirely different from, and far larger than his conception of it. To see his carefully gathered collection of books and magazines outnumbered four times over by modern scientific works in a single year brought a new experience for which he was not prepared.

However, Mr. Clark's ideas and ideals grew with the growth of the University and at his death he left one-quarter of his estate for the endowment of the library, thus placing it among the very few well endowed university libraries in the country.

Dr. Granville Stanley Hall

The name of Dr. G. Stanley Hall is associated in educational centres the world over with child study, and the history of his life goes to show that his training, even from the evenings about the home hearth, tended to that consummation. His mother, Abigail (Beals) Hall, educated at the Albany Female Seminary, left it with a decided literary trend. When the son decided to go to college, the father, although as ambitious as the mother,

Alonzo Whitcomb

was sadly grieved because he had added to his farm and felt that it would be a heavy loss if the son went away. The mother encouraged the idea, as it was her dearest wish that her son should enter the ministry. The father's opposition was finally overcome, and the lad was sent to Williston Seminary at Easthampton to prepare for college. When this decision was made known there were the usual village gossips who declared that "Stan" was going to college because he was "too durned lazy to work on the farm." They decided the father and mother were "stuck up," they were "come-outers" because they had tried to give themselves an education and, failing in that, they were ready to make foolish sacrifices for their children.

Granville Stanley Hall was born on the first of February, 1846, in Ashfield, Franklin County, this state. The Hall family is of old New England stock; the father, Granville Bascom Hall, was a descendant in the eighth generation of Elder William Brewster, who came over in the Mayflower in 1620 with his wife and two sons. Other ancestors were: John Hall, who came from Coventry, England, in 1630, in a fleet with Governor Winthrop, and settled in Charlestown; John Lillie, born in 1592, who also came over in the Mayflower; James Gorham, born in England in 1550; Richard Willard and Richard Sears.

The mother, Abigail Beals Hall, was a descendant in the seventh generation of the famous John Alden, one of the signers of the Mayflower compact.

The Ashfield Halls were substantial, hard working, comfortable, common-sense farmers without much ambition or much education, of great physical vigor, and some of them remarkable for longevity, one of them dying a few years ago lacking but a few months of 99 years of age.

The Beals were also of the farming class, but were noted for mechanical traits and piety. From all evidence, it would seem that Dr. Hall's parents were more anxious for an education than other members of their families. Mrs. Hall applied to Mt. Holyoke Seminary, but was not admitted, as it was full. The children seem to have inherited their love of learning from their mother.

In Dr. Hall's "Notes on Early Memories" he tells of living part of his time with his parents, part with his grandparents, uncles and aunts. He attended school and academy three-fourths of the year, earning an accordion by braiding palm leaf hats in the evenings one winter, earning a pair of skates by reading the Bible through for one of his aunts, and working hard in the fields, digging post holes for fences, haying, harvesting, keeping cattle, etc. It was a busy life, yet there were diversions in the way of hunting, fishing, skating, tramping and camping-out, Indian fashion, with bow and arrows.

In the long winter evenings there was always reading aloud, novels, the Spectator, Shakespeare, Pilgrim's Progress, Clark's Sermons, Baxter's Call, Bunyan's Holy War and, best loved of all, the Arabian Nights. There were spelling schools and debating societies where the parents took part, and when he was about 14 he and his father were pitted against each other.

George W. Wells

A neighbor, to tease the father, said in his hearing, "Stan beat his dad," which seemed to trouble the father at the time.

The father taught his two boys to play the violin. He gave his children lessons in oratory, placing the feet, directing the gestures, the mother acting as a committee on decisions. When Stanley was 11 years old his father was elected to the State Legislature, and the letters he sent home were read aloud and discussed. Each member of the family kept a little journal which was read aloud Saturday nights. They also conducted a manuscript paper, the "Cottage Weekly News," his sister Julina being the editor. The mother saw to it that the minor graces were not neglected, and taught them how to enter a room, to greet people, to pass a book, to pick up a handkerchief, to salute people on the street.

Legendary lore, fairy tales and allegorical stories were acted out among the trees, shrubs and rocks on the farm, all of which was a good foundation for the real education which followed.

Young Hall often went with a chum, Horace Mann, to hear Henry Ward Beecher. It was he who advised him, upon hearing that he was more interested in philosophy then in theology, to go to Germany. He also gave him a letter of introduction to Henry W. Sage, who loaned him at interest, payable at his convenience, $500. He entered the University of Bonn, later the University of Berlin. He served as a war correspondent for American newspapers during the Franco-Prussian War, and at various periods taught a district school, tutored in families, and even supplied pulpits. He entered the Union Theological Seminary and in a few months took his B D. degree. He took the degree of Doctor of Philosophy at Harvard, and, having saved some money at teaching during six years, he made a second trip to Berlin. It was while attending the University of Berlin that he renewed acquaintance with Miss Cornelia Fisher, and they were married there, keeping house during the academic year at Leipzig.

Dr. Hall's first professorship was in 1872, at Antioch College, at Yellow Springs, Ohio. He later accepted a tutorship at Harvard. He also lectured there and at Johns Hopkins, the ideals of which appealed so strongly to him that they are largely embodied in those of Clark University, the presidency of which he accepted May 1, 1888.

Clark College

CLARK COLLEGE was established in 1902 under the will of the late Jonas G. Clark, in the belief that by careful economy of time the average student could lessen the length of his college course without materially affecting his real preparation for his life work. In accordance, therefore, with the will of the founder, the College offers to young men a regular three year course, leading in all departments to the degree of Bachelor of Arts. In this respect the College is entirely unique, in that it gives its courses in three years instead of four, as is the custom in most colleges. It is equally unique in its tuition fees, which are only $50

annually, without any extras, certainly very much lower than the rates of any other college in New England.

Several conditions have aided in the success of the plan at Clark. The College started under unusually favorable conditions. Its sister institution, Clark University, was already in existence and had obtained an international reputation. There were no traditions to interfere with the planning of its curriculum, the creation of an atmosphere of earnest work and the enforcement of its standards of conduct. An endowment sufficient for its needs in the days of its infancy freed it from the temptation to accept or retain students for the sake of their tuition fees. The College has from the first been fortunate in having a faculty large in proportion to the number of students, so that each may have the advantage of the closest contact with his instructors. The students are free from the distractions accompanying intercollegiate athletic contests, and are thus enabled to concentrate their energies upon the work of the curriculum.

Clark College is well equipped both materially and in its personnel, and commends itself to earnest young men who wish to economize in either time or money. The regular three year course gives a maximum training in a minimum time, and the small expense reduces the financial problem to its lowest terms. As these facts have become known, the College has drawn more and more widely from the earnest and serious minded students of the academies and high schools of Massachusetts and neighboring states.

The College shares with the University in the generous library endowment provided by the will of the founder. The University Library occupies a building on the corner of Downing and Main streets, and the College Library occupies the whole first floor of the adjoining building. This new building was made possible by a bequest from Mrs. Jonas G. Clark. The College Library now contains about 12,000 volumes, with shelving capacity for 3,000 more. It is fully equipped with all the material necessary for undergraduate courses. The students have free access also to the adjoining University Library. The two libraries are under one management and derive their income from one fund, but it has been the desire from the first to give the College Library its own quarters, devoted entirely to the needs of the College student.

The tuition of the College has been fixed by the Board of Trustees at $50 per year, payable in advance in two equal installments, unless otherwise arranged.

President Carroll D. Wright's first class in the Collegiate Department of Clark University was graduated in 1905, and the occasion was honored by the presence of President Theodore Roosevelt, on whom Clark University conferred the honorary degree of Doctor of Laws.

The regular courses of instruction in the College are comprised in the following 14 departments:

Mathematics, Physics, Chemistry, Biology, History, Political and Social Science, Psychology, Philosophy and Pedagogy, English, German, Romance Languages, Greek, Latin and Physical Education.

Edmund C. Sanford is president of Clark College, succeeding the late Carroll D. Wright.

Worcester Academy

WORCESTER ACADEMY began its history as a trade or industrial school and out of that humble beginning has evolved one of the best preparatory schools in the country. This has been largely accomplished under the able direction of the principal, Daniel W. Abercrombie, LL. D., who has been at its head for 32 years. One of the first of several principals for short tenures was Eli Thayer, the founder of the Oread Institute.

After Dr. Abercrombie took charge the name was changed from the Worcester County Manual Labor High School to the Worcester Academy. In the very early days of the Academy, even previous to the Manual Labor High School period, about 1858, it was a female seminary and later was used as a hospital under the name, Dale Hospital. It was bought and occupied by the Worcester Academy in 1870, with Rev. Silas Bailey as its first principal.

The academy was first located on Main Street, not far from the present Piedmont Church and was founded in 1843. After several years it changed its location to the old Antiquarian Building on Summer Street, near Lincoln Square.

The Academy is the fourth in point of numbers among the great secondary schools of New England. At the present time there are 300 pupils enrolled. The total number graduated is between 1,200 and 1,500 and about 50 are added to that each year.

There are three courses of study: a Classical, a Latin Scientific, and a Scientific, and these are designed to fit the student for any institution of higher grade he wishes to enter. It cannot be spoken of as a fitting school for any particular college. From the classes of 1910 and 1911, 80 graduates entered 18 different colleges and technical schools. It, however, patronizes home industries by sending more of its students to the Worcester Polytechnic Institute than any other single school or college. One of the strongest elements in the vitality of the academy is the breadth of its training and its democratic spirit. The private secondary school exists primarily to fit boys for college, but in many schools this aim is limited to fitting boys for one particular college. In such case the breadth of training is in danger of being limited by the requirements for entrance of that particular college.

Another contributory feature to the great success of the Worcester Academy is its athletics. There are football teams, both of the American and soccer varieties, hockey, baseball, tennis and basketball. The new athletic field—Gaskill Field, named in honor of the late Judge Francis A. Gaskill, third president of the board of trustees, is the best of its kind in New England. It contains two baseball fields, a football field, a quarter-mile track with 220 yards straight-away, three tennis courts and a field house, a building made of cement with red Spanish tile roof, containing separate dressing rooms and shower baths for home and visiting teams.

American Optical Co., Southbridge, Mass.

President, Channing M. Wells Treasurer, Albert B. Wells

Vice-President and Secretary, J. Cheney Wells

Gaskill Field has been the battleground of many a well-contested inter-school competition.

In 1898, the Kingsley laboratory was erected at a cost of $90,000 to keep pace with the increasing emphasis on scientific and practical subjects. This building is unequalled in any secondary school in the degree to which its equipment meets every need for the adequate teaching of natural science, drafting and manual training. As a result, students preparing for technical schools have been attracted to the Academy. Courses in pattern-making and casting are added to carpentry and wood-turning, thus anticipating in still larger measure the requirements of the technical schools.

Its alumni are found in 41 states and 5 foreign countries. Directly through its own expenditures and indirectly through the money spent by its students, the Academy brings $200,000 annually into the channels of trade in this city. It is the oldest of Worcester's higher educational institutions. There are 1,100 living graduates.

Gaskill Field cost $70,000 and consists of 10 acres. There are three dormitory buildings, and besides Kingsley Hall there is Walker Hall, while Adams Hall is the dining hall, the megaron, gymnasium with swimming pool.

The president of the board of trustees is Paul B. Morgan, of the Morgan Construction Company; the secretary is George Crompton, of the Reed-Prentice Company, and Lyman F. Gordon, of Wyman & Gordon, is also a trustee. The faculty consists of 19 men.

The Bancroft School

THE BANCROFT SCHOOL was organized September, 1900, by the present headmaster, Frank H. Robson, who has been in charge of the school since its organization. The school was incorporated in 1902, land was bought at 111 Elm Street, and the present building was erected.

The aim of the school has been threefold: first, to secure teachers of ability, culture and a large personal influence; second, to provide a building with the best hygienic conditions; third, to develop a broad curriculum. In accordance with the foregoing, the school provides training from kindergarten to college entrance. Its graduates have entered most of the leading colleges for men and women. Beginning with September, 1913, only girls were admitted to the high school department, while both boys and girls were admitted to the elementary school. The school has grown so that at the present time it is the largest private day school in New England outside of Boston. The faculty is now composed of 13 teachers.

Union Twist Drill Co., Athol, Mass.

President, John A. McGregor

Treasurer, J. H. Drury

Secretary, W. B. McSkimmon

Oread Castle

ON AN EMINENCE once known as Goat Hill, half mile south from City Hall, may be seen a battlement of buildings known as Oread Castle. It was opened May 14, 1849, as the Oread Collegiate Institute for Women. Its life began when no college except Oberlin opened its doors to women, a quarter of a century before Mount Holyoke became a college and when there was yet no Vassar, nor Wellesley, nor Bryn Mawr, nor Smith to furnish the higher education to women which the times were then beginning to demand.

Mount Oread, as it was afterwards called, rose unexpectedly out of its barren and rocky eminence a unique building like a veritable old castle, with its grey walls and turret towers.

In 1845, Eli Thayer, the founder of the school, purchased a tract of land on Goat Hill, a rocky eminence on what was then the suburbs of Worcester. By subsequent purchase, he enlarged this until it was a field of 10 acres, including the lot on which Piedmont Church now stands. For the school buildings, Mr. Thayer was his own architect and during the earlier period of construction he kept his townsmen guessing as to the purpose of the building. How little Mr. Thayer took outsiders into his confidence or how little he sought the advice and support of others is shown by the fact that his intention to erect a young ladies' school on the summit of the hill he had bought was not disclosed until a part of the structure was nearly completed.

Mr. Thayer's original plan was a building resembling a feudal castle of the middle ages in the form of a quadrangle with an inner court 170 feet square. Circular towers 50 feet in diameter and four stories high were to be placed at the four corners. These were to be connected by four halls each four stories high and 40 feet deep, the whole to be used for dormitories, recitation, lecture, dining and reception rooms. The building was designed to accommodate 600 students, more than were then found in any American college. The north and south towers and the hall connecting them were completed in 1852, the whole having a frontage of 250 feet. The other parts included in the original plan were never begun. It is also an interesting fact that the stone used in its construction was quarried on the hill on which it stands.

In 1854 there were 12 teachers and the boarding students entirely filled the building. Besides that, many of the prominent families of Worcester sent their daughters. There were three departments: primary, academic, and collegiate; the latter, offering a four-year course of study closely resembling that of Brown University, of which Mr. Thayer was a graduate in the class of 1845. Besides the academic studies, instruction was given in music, drawing, painting and other branches considered necessary to the accomplishments of young women. Rather ahead of the time, also, was the regular gymnastic exercises required of every pupil, "As means to health and to develop symmetry of form and grace of carriage." Students were expected to walk daily in the open air and a stone bar and

riding amphitheatre in architectural harmony with the school were erected on the grounds, soon after the school was established.

The spirit with which Mr. Thayer embarked on this new enterprise, the independence with which he assumed the entire burden of responsibility — be the outcome a success or failure — is shown in a statement which was printed in some of the early catalogues.

"Individual effort originated and has thus far sustained this institution. It has received no endowments from private munificence, nor public bounty except good wishes and liberal patronage. This is all the endowment it will receive in the future. Whatever may be the result, it must stand on its own merits and the will of the people. We hope that its patronage will never be prompted by any feeling of compassion or condescension. We sell education at cost. If our merchandise is not worth our price, or if we have brought wares to the market for which there is no demand, we ask no one to share our loss. Oread Castle was founded in good faith under the honest conviction that it might serve the country and the world by advancing in some degree the able cause to which it is devoted. Such we hope may be its destiny."

Mr. Thayer was almost alone in the belief that girls could equal any college students of the other sex in intellectual achievements if they had the same advantages. The Oread continued for 32 years, closing when the health of Mr. Thayer's son, Hon. John Alden Thayer broke down after one year as its principal.

Henry S. Washburn, a member of the Board of reference of the Oread, was the author of the world famous song, "The Vacant Chair." It was written in memory of Willie Grout, a martyr at Ball's Bluff, whose two sisters, Nellie and Lizzie Grout, were students at the Oread Institute.

Worcester Domestic Science School

IN 1898 HENRY D. PERKY remodeled the interior of Oread Castle, adapting it to the requirements of a first-class school of Domestic Science — one of the first of its kind in this country.

As the movement was comparatively new, Mr. Perky wished to extend the knowledge of domestic science training as widely as possible throughout the United States, so a scholarship to the school was given to each state in the Union — the candidate for admission to be appointed by the governor of each state respectively.

With the building complete, in new dress and new furnishings in January, 1899, Mr. Perky opened his school with upwards of 40 young ladies who were most enthusiastic over the new science and its adaptation to the home.

For seven years this work in Domestic Science and Home Arts was continued with increasing interest, until the educational importance of the work has become recognized at home and abroad.

Upon the death of Mr. Perky several of the students went to the home of one of the teachers — Mrs. F. M. Wethered, and asked to continue their studies. Their request was granted and thus developed the nucleus of the Worcester Domestic Science School which has since carried on the work in Worcester.

The course has been enlarged and extended to cover the subjects scientifically and professionally

A normal course of two years is given at this school which trains for teaching Domestic Science and the Home Arts in public school courses, trade school, institutional and playground work.

The school has grown steadily under Mrs. Wethered's management until it now occupies three buildings with modern equipment and facilities.

The school has been especially favored with patronage from all over the country.

The graduates are occupying exceptional positions throughout the United States, Canada and Cuba.

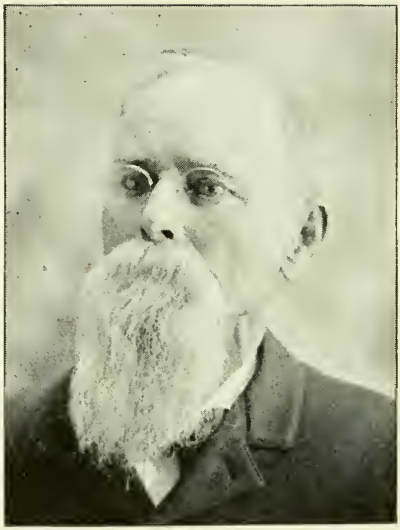
Domestic Science has found its permanent place in public and private schools as well as in the college curriculum, where it has not only dignified the Household Sciences, but brought renewed interest in all home work to young women.

Worcester—A City of Churches

WORCESTER'S first log church, built in 1717, was founded in 1715. The first frame church was erected in 1719; the Old South Church on the Common was built in 1763. It was torn down in 1888. The cornerstone of the present Old South Church was laid July 4, 1888, and the building was completed and dedicated Sept. 17, 1889. The new church cost, complete, $160,000.

Among the other churches in Worcester which had early beginnings in the city are the following:—In the Baptist faith: First Baptist, founded in 1812; Pleasant Street, 1841; Dewey Street, 1872. First Church of Christ (Disciples), 1860. In the Congregational denomination the older churches, next to Old South, are Central, 1820; Union, 1836; Memorial, 1865; Plymouth, 1869; Piedmont, 1872. The Unitarians are represented by the First Church, 1785, and the Church of the Unity, 1846. The Society of Friends was established in 1732. In the Methodist faith Trinity is the oldest, established in 1834; Laurel Street, 1845; Trowbridge Memorial, 1860; Grace, 1867; Bethel, 1867; First Swedish, 1878; A. M. E. Zion, 1846. The two oldest churches in the Episcopal denomination are All Saints, 1843; and St. Matthews, 1871. The Second Advent Church dates back to 1841, and the First Universalist to the same year.

In the Catholic churches the oldest is St. John's, 1846; St. Anne's, 1855; St. Paul's, 1869; Notre Dame, 1869; and the Immaculate Conception, 1874.



Dexter Harrington

The most costly of the 100 churches in this community is undoubtedly Union Congregational Church, which cost over $260,000. The design is a model of the Notre Dame Cathedral in Paris. Union Church was built in 1890, and much of the arduous work in connection with its erection was performed by the late Philip W. Moen, who was its most wealthy member.

Commercial Organizations

WORCESTER has a number of very live commercial and manufacturing organizations. The newly-rejuvenated Chamber of Commerce, which was transformed from the old Board of Trade into the new organization under the presidency of Edward M. Woodward, of the Woodward & Powell Planer Co., is the largest organization of its kind in New England, outside of Boston.

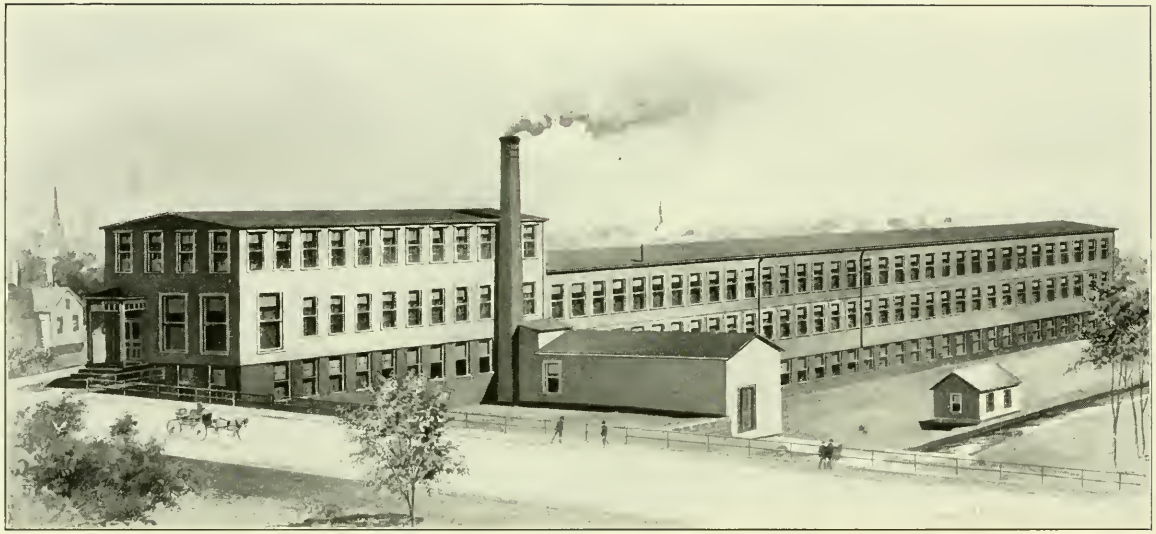
Mr. Woodward, who was president of the old Board of Trade for a couple of years, rendered a splendid service to the City of Worcester in bringing about the change and making the Chamber of Commerce the hustling, public-spirited commercial body it is to-day.

With the Chamber is now incorporated the Worcester Merchants Association, under the heading of the Mercantile Bureau. For many years the Merchants Association did extremely valuable work for its members under the direction of various presidents, the executive official being Edward B. Clapp, who is now in charge of the Mercantile Bureau of the Chamber.

The Chamber of Commerce publishes monthly the finest trade magazine printed by any similar organization in the world. The newly-elected president of the Chamber is J. Lewis Ellsworth, and the secretary, Herbert N. Davison, both of whom have had extensive experience in the work of such an association, and who are live wires, always on the *qui vive* for Worcester's interests.

Another equally active organization of business men is the Worcester Builders Exchange, established in 1866. The members of this organization are the men who have built Worcester, literally speaking. They are the craftsmen who have reared the great bulk of the handsome, substantial manufacturing and mercantile buildings which now adorn Worcester's streets, as well as the beautiful and attractive residences to be found all over the city. The president of the Exchange is George W. Kilmer, and the secretary for many years has been and is to-day Henry W. Sweetser.

The Worcester Branch of the National Metal Trades Association has been in existence in Worcester since 1901. It has been a very potent force in Worcester County and even beyond its confines in making for the very best industrial conditions which are possible in the metal trades lines, as well as furnishing employment free of charge, through the instrumentality of its Labor Bureau, to thousands of men and women during all the years of its existence. It was the pioneer in systematic free employment work in Massachusetts, and to the Worcester Branch belongs the credit of



Harrington Cutlery Co., Southbridge, Mass.

General Manager and Treasurer, Charles D. Harrington

having established the first office of this kind in this state. The office has had quarters at 44 Front Street since its inception.

The general secretary for the past eight years is Donald Tulloch, and his assistants are: Employment secretary, John R. Back; bookkeeper, Miss Elizabeth M. Tulloch; stenographer, Miss Dorothy Dudley.

Within recent years several smaller business men's organizations have been established in the city, each of them doing grand work in the particular sphere which they have adopted for their activities. These include the Worcester Publicity Association, the Rotary Club, and the North Main Merchants Association.

School of the Worcester Art Museum

THE SCHOOL of the Worcester Art Museum began its 13th year October 3, 1913. For the first three years of its existence, from 1898 to 1901, the instruction was limited to drawing and painting. In 1901 design was introduced. In 1905 a class was formed in metal work. For two years this class worked in a room at the Museum, but after Stephen Salisbury's death, his residence being unoccupied, it was considered wise to take the metal and design classes away from the Museum building. Rooms were fitted up at the Salisbury House, and into these well equipped shops the two classes were moved September 23, 1907. Classes working from the antique and life remained at the Museum.

A year later, in September, 1908, weaving and bookbinding were added, making in all three crafts The increased size of the school soon demanded a principal to direct its work. H. Stuart Michie—then instructor at the George Washington University was secured, and came to Worcester in 1909 to assume the responsibility of the school and teach design, his training in Toronto, New York and London well qualifying him for this position.

While drawing and painting alone are still pursued by some of the pupils, the school has gradually grown larger in its scope and purpose; its aim is to perfect the courses in design and the applied arts, basing these courses on a sound training in drawing and color. Such a system is found best exemplified in the London County Council Schools, under Professor Lethaby, which, with the best instruction in the principles of art, are kept in close touch with the industries of the city.

The school has taken a great step forward in that now, for the first time, all the teachers are resident in Worcester.

Otto Victor Humann, teacher of drawing and painting, was instructor in the summer school of Columbia College. Mr. Humann's instruction in drawing and color fit the pupils for facility in the technique of design. He has a special class in drawing, water color and oil painting for those who are unable to attend the school at any other time; also a class for children.

Worcester Art Museum

The jewelry made by Edmund B. Rolfe is well known in the crafts shops of the principal cities. He is an expert in enameling, and has introduced it into the school in connection with his instruction in metal work. He also has classes in modeling, especial attention being given to evening classes, to which a limited number of the members of the Art Students Club have been invited.

The success of the bookbinding class under Miss Elizabeth G. Marot was shown by the beautiful display of 40 books bound by last year's class, exhibited in the Spring Exhibition of the school at the Museum. Miss Marot studied with Cobden Sanderson in London and with M. Domont and M. Nouhlac in Paris. Her instruction embraces what is best in the English and French methods.

Worcester is the home of many industries in which the artistic element is an important factor. The Museum School is designed to be of practical use. With its staff of accomplished teachers, it offers courses of the highest value and advantage to the artisan and skilled worker. Here skilled mechanics and artisans may acquire the artistic training which will enable them to rise higher in their various fields of labor.

In 1912 Pottery was added and George W. Greene of Boston secured as instructor. Different processes are taught and the glazing and firing are done on the premises.

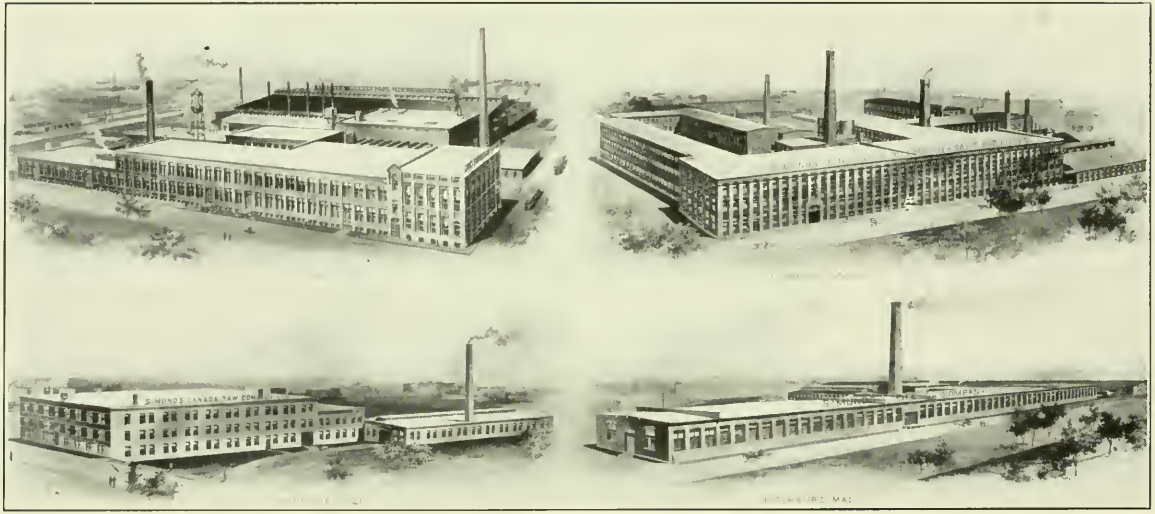
Massachusetts State Normal School

THE MASSACHUSETTS STATE NORMAL SCHOOL was founded in 1874 and is, therefore, about to celebrate its 40th anniversary. It has graduated about 1,500 teachers and a very large portion of them have had service in the schools of Worcester, probably from 65 to 75 per cent. of the teachers in service in this city being graduates of this school.

The courses are planned exclusively for the preparation of teachers for grades below the high school, including kindergarten, and particularly as high as the sixth grade. As a usual thing, the students take up the work of teaching for which they are prepared.

Being situated in a large city, surrounded by many well populated towns which are all easily accessible by means of trolley and steam cars, the Worcester Normal School acts very largely as a local institution, receiving its students from a comparatively small area and thus supplying teachers to this limited area. For that reason, it stands as a training school for the city of Worcester more than for the state. This has brought about a close association between the city and the Normal School, with the result that there is a system of apprenticeship by means of which the students go out into the schools of the city for practice teaching. This is a regular part of the courses and enables students to gain, by actual work and observation, an experience which fits them to take responsible positions immediately upon graduation. It is an institution that is doing splendid work and one that the city of Worcester can well be proud of.

The principal is Dr. William B. Aspinwall.



Simonds Manufacturing Co. Plant

President, A. T. Simonds
Vice-Presidents, C. F. Braffett, T. F. Howarth, H. A. Sargent
Treasurer, G. K. Simonds
Secretary, J. E. Kelley

Holy Cross College

THE COLLEGE OF THE HOLY CROSS was founded in 1843 by the Right Rev. Benedict Joseph Fenwick, second Bishop of Boston, It is the oldest Catholic College in New England. It was incorporated by the State Legislature in 1865 with power "to confer such degrees as are conferred by any college in this Commonwealth, except medical degrees."

The system of education is founded on the famous Ratio Studiorum of the Society of Jesus, whose members direct the Institution and constitute the entire teaching staff.

The college course comprises four years of prescribed studies, with a few elective courses in the last year. The completion of a four years' high school course (classical) usually fits a student for entrance.

The formation and training of character is considered of first importance, hence moral training and religious instruction receive special attention. The wisdom of this provision was emphasized by President Roosevelt when he said, at the commencement exercises, June 21, 1905: "It is eminently characteristic of our nation that we should have an institution of learning like Holy Cross, in which the effort is consistently made to train not merely the body and mind, but the soul of man, that he shall be made a good American and a good citizen of our great country."

Physical training is amply provided for by a well equipped gymnasium, equal to the best in New England, football and baseball fields, tennis courts, etc. Physical instructors and experienced trainers are also provided. A representative of the faculty exercises general supervision of this department and will see that students do not become so engrossed in athletics that their studies might be neglected or their health suffer.

The healthfulness of the location and the natural beauty of the surrounding scenery are conspicuous. The spot was considered at the time consecrated in local history. Near it the first humble wigwam church of Worcester had been erected by John Eliot for his Indians in 1674. The Fathers of the Society of Jesus who had long been established in Maryland were invited to organize the courses of study, according to the curriculum of their college at Georgetown, in the district of Columbia, and to take entire charge of the teaching.

On the second day of November, 1843, classes were organized in what was then known as the "Seminary of Mt. St. James" and were there continued until January 13, 1844, when the first college building was completed. The cornerstone of the latter was laid by Bishop Fenwick June 21, 1843. Speaking of this event, the Catholic Expositor of August, 1843, describes the purpose of the new institution as "the advancement of the arts, the cultivation of the sciences and promotion of patriotism, morality, virtue and religion." The same publication describes this first building as a brick structure 104 feet in length and four stories in height "with a fine portico on the centre of the front."

On the afternoon of July 14, 1852, eight days before the annual commencement, a fire broke out which destroyed the whole of the central building. On the 3rd of October, 1853, however, the college was enlarged and remodelled and again ready to receive students. The effect, however, of such a calamity on the young college is shown by the interruption of graduating classes from 1852 to 1858.

The charter granted to "the trustees of the College of the Holy Cross in Massachusetts" with other privileges, the power to confer such degrees as are conferred by any college in this Commonwealth, except on medical degrees." This placed this college on the equality before the Commonwealth with all other institutions of a similar character.

The college buildings, as stated above, are situated on one of the highest of the eminences surrounding the city of Worcester. Towards the north this "Hill of Pleasant Springs" commands an extensive and most delightful view of Worcester, at the time of the founding of the College a town of hardly 10,000 inhabitants, over and beyond its many towers and spires and other elevations looms aloft in the background against the northern horizon, the summit of Mt. Wachusett, the second highest point in Massachusetts.

Young Men's Christian Association

THE YOUNG MEN'S CHRISTIAN ASSOCIATION was organized January 14, 1864, and the present building, Elm and Pearl streets, erected in 1887. The boathouse at Lake Quinsigamond for summer work was erected in 1902. The camp site at Washington, N. H., eighty acres, was given to the Association in 1910, and the dormitory addition, the old Day and Gage buildings on Pearl Street, was purchased in 1912.

The Association is governed by a board of 21 directors, 13 of whom are actively identified with manufacturing concerns.

The present membership is 1,523, and includes 25 nationalities, the church affiliations of which embrace Catholic, Hebrew, Mohammedan and Protestant.

In the Physical Department there are 30 classes per week, with over 900 men and boys using the gymnasium and baths.

There are 25 classes in the Educational Department, with enrollment of 940. Thirteen classes in English for foreigners outside the building, with enrollment of 134. Total enrollment, 1,074. Sixty-seven per cent. of educational class students are engaged in industrial pursuits.

There is a dormitory with accommodations for 50 men and practically filled all the time. The majority of roomers are young men recently arrived in the city. The Boys' Division is wide awake and doing a strong work for employed, high school and grammar school boys.

In religious work the Worcester Association ranks well up among the 600 city Associations of the United States and Canada. In the meetings each week in 27 shops at the noon hour there was a total attendance of

31,836 for the year, the Association ranks seventh and ranks high in various other lines. The boys' meeting, held weekly, with an average of nearly 600, is the largest of its kind in the country.

The Association building, occupied since 1887 and remodelled from time to time, has been sold to the Knights of Columbus, who will take possession July 1, 1914. This does not include the dormitory property adjoining the Association building on Pearl Street.

As a site for the new home of the Association, the Dodge estate at 766 Main Street, running through to Murray Avenue and containing brick house and 63,016 square feet of land, has been purchased. The plans include removal of the house from the Main Street front to Murray Avenue and to utilize the same for boys' work and to erect the new building on the Main Street site. This building will contain bowling alleys, social rooms, educational class facilities, up-to-date physical equipment, natatorium, baths, hand ball courts, dormitory and executive offices. On the Murray Avenue site the old fish pool will be enlarged and made into an open air swimming pool and curling rink. On the north end of the lot, running track, tennis courts, bowling green and other facilities for out-of-door work will be provided. The trees on the place will be conserved and the park utilized for various lines of summer work, such as band concerts, open air motion picture entertainments, picnics, etc. This proposition is said to be the most unique of anything in the Association world and will put Worcester in the front rank in facilities in work for men.

Clarence W. Hobbs, of the Hobbs Manufacturing Co., is president.

The general secretary is Fred L. Willis, and the physical director Edward W. Wilder, who has an honorable record of a quarter century's work with the Worcester Association.

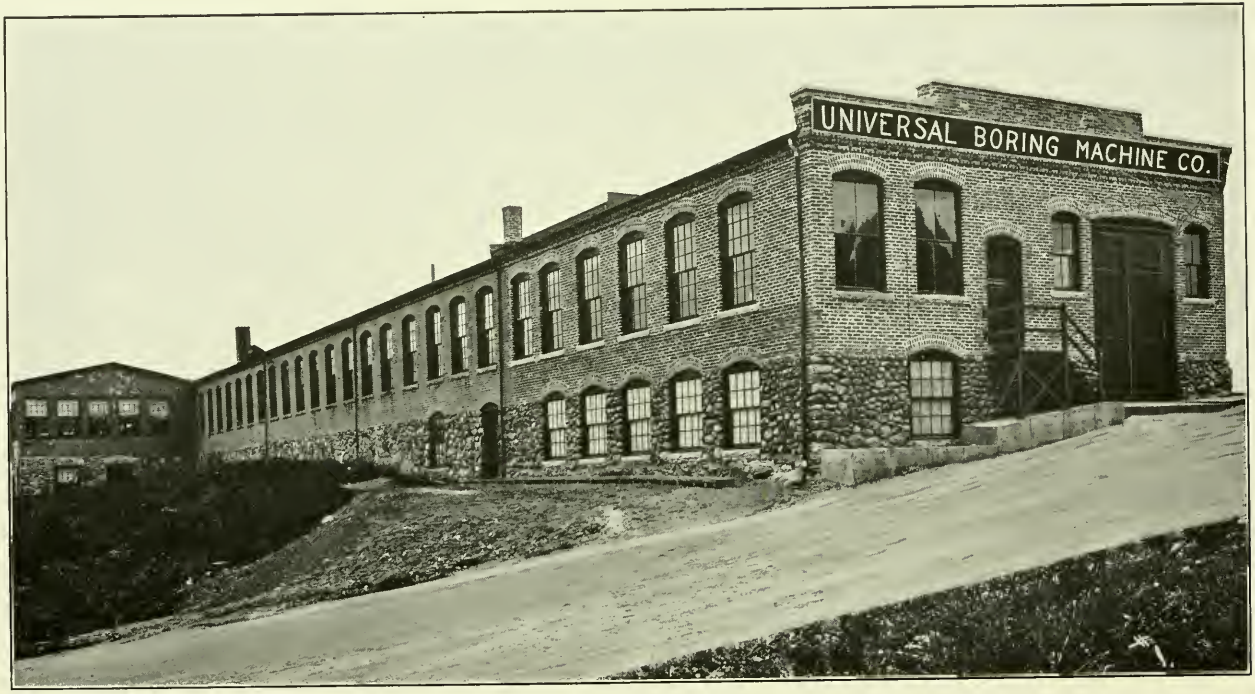
Young Women's Christian Association

THIS WORCESTER ORGANIZATION, a branch of that great body that has now spread into every land where white men and women have carried civilization and progress, is now 30 years old.

It was suggested to a few thoughtful women, by observations, of the need of a safe meeting place for wage-earning girls, where they could spend their evenings in safety and comfort

The condition of Main Street was quite the same then as it is now, except that now there are more attractions offered to the thoughtless and unwary.

These women held many conferences and finally decided to hire rooms, if a sufficient number of people could be interested to finance the work. The rooms must needs be on Main Street that they might be easy of access. They must be attractive and homelike, with some one in attendance who understood girls and could meet them on their own ground and make a pleasant place for evening gatherings.



Universal Boring Machine Co., Hudson, Mass.

President, A. W. Wigglesworth Vice-President, A. R. Stedfast Treasurer, C. A. Clarke

General Manager and Secretary, A. H. McBrair

Through the first president, Mrs. Charles G. Reed, and Rev. Dr. D. O. Mears, Dwight Reed became interested and offered $1,000 toward the work when the organization should be completed.

History says that on the 13th of June, 1885, the first meeting of subscribers to the agreement of forming an association for helpfulness to the wage-earning girls and women of the city was held in the rooms of the Y. M. C. A. In a short time the organization was completed, a constitution adopted and officers elected, together with an Executive Committee of 24 members—Mrs. Charles G. Reed was president.

Through the interested kindness of Dr. Mears, who transacted the necessary business, the certificate of organization was procured. With the organization completed, work began.

The first question confronted was that of a home or rooms suitable for the work. At first a boarding house seemed a necessity, but after a long search the project was abandoned and the attention of the committee was turned to securing rooms. It was realized that great economy was necessary and many weary days were spent in the search. The committee finally secured three rooms on the third floor of 352 Main Street. These were repaired and possession taken February 1, 1886.

Several months later, May 26, 1886, the first annual meeting was held in Plymouth Chapel, at which time Mrs. Reed, the president, resigned on account of illness.

Mrs. Charles F. Rugg was elected to fill the office. She served until 1892. In all its history there have been but four presiding officers, Mrs. Charles H. Morgan was the third president and she rendered splendid service to the Association in that capacity for a score of years. It was under her guiding hand and remarkable executive ability that the organization made such rapid strides in the last two decades.

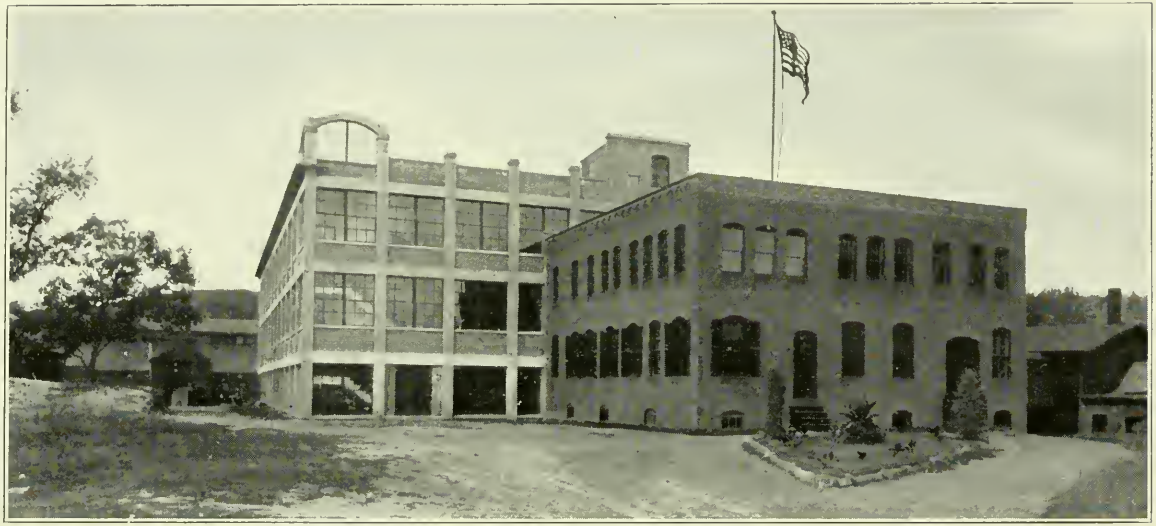
The fourth and present head of the Association is Mrs. Frank L. Durkee.

The work increased rapidly, educational classes were formed. Young women were most eager to avail themselves of the opportunites offered them. A noon lunch was established. This was the outgrowth of a cup of hot tea or milk being furnished to make the cold lunches more appetizing.

In 1890 these quarters were entirely outgrown. The next problem was that of a new building. This seemed necessary in order to save the important work established. The organizers had the confidence of the public and decided to appeal to the people of the city for the needed help.

Already a bequest from Dwight Reed of $4,000 was received, making his total gifts to the Association $5,000 and by his gift the Y. W. C. A. was made possible. Very many generous friends responded to the cause. The heaviest contributor to the work was E. A. Goodnow.

The land upon which the buildings stand on Chatham Street was purchased for $18,000. The cost of the building, exclusive of special gifts, was $87,651.10. The sleeping rooms and parlors were finished and furnished by churches and individuals. It was a proud day when the Y. W.



Athol Machine Co., Athol, Mass.

President and Treasurer, L. S. Starrett Secretary, F. E. Wing General Manager and Superintendent, S. E. French

C. A. took possession in 1891 and opened the doors for the inspection of donors and the general public.

As the committee went over the building, it seemed so large it was feared it might never be filled, yet in less than three months every room was occupied. Since that time the Association has secured the property adjoining and also has an apartment at 68 Chatham Street. To-day these buildings are crowded and largely with young women who need sheltering care.

The first attempt at serving lunch was when the cup of hot tea or glass of milk and on Saturday night a pot of baked beans was served. Compare this with the lunch department of the Association of to-day, when in the last four months there have been served 40,000 meals exclusive of the help in the home and lunch department.

There is also an educational department covering many useful subjects. A Junior Department is laying the basis for a stronger minded young womanhood. The children come from homes where the busy mother's time is fully occupied with the care of her family.

The gymnasium is largely patronized by the young women of Worcester, while an extensive library enables the girls to pass many pleasant and profitable hours.

The work among the young women in factories and shops was established some years ago by one of the secretaries and is so promising that through the contribution of interested friends a trained secretary for that work alone is engaged.

Free Public Library

CARLYLE once said, "A collection of books is a real university." The Scotch sage undoubtedly had special reference to an individual library such as may be found — small, but exceedingly choice, in the average Scotchman's home. But the same is true also in a larger sense of the free public library of a town or city. In this way, Worcester has a number of choice universities.

The Public Library was founded in 1859, the old building erected in 1861 and the new building on Elm Street in 1891. It was the first public library in Worcester, being an outgrowth of the Young Men's Association Library.

The valuation of the Library is, personal property, $160,000, real estate, $175,935, total, $335,935.

There are three branch library buildings: at 470 West Boylston Street, 813 Millbury Street, and 705 Southbridge Street. The Library now contains 200,934 volumes and 27,741 pamphlets. The circulation for the year closing November 30, 1913, was 466,339, of which 60,196 were sent to the public schools.

The most interesting fact of the library history during the past year is the erection of three branch libraries referred to which were dedicated

Charles G. Allen Co., Barre, Mass.
Proprietor, Harding Allen

the latter part of February. They were gifted to the city by Andrew Carnegie, the land on which all of the buildings stand being bought and presented to the city by manufacturers in these sections, prominent among them being members of the National Metal Trades Association. The librarian is Robert K. Shaw.

The negotiations with Scotland's most distinguished American to secure the gift of $75,000 for the Branch Libraries in Worcester, were conducted by Hon. James Logan, while he was Mayor of Worcester.

Worcester Art Museum

THE WORCESTER ART MUSEUM was founded in 1896 by Stephen Salisbury who gave the land, a sum for the building, which was erected in part by contributions from citizens of Worcester, and a modest endowment, placing the whole in the hands of trustees.

At his death, he bequeathed his whole estate, aside from minor personal legacies, to the Museum, amounting to about $2,750,000.

The Museum building is valued at $100,000. The Salisbury house, on Highland Street, now used for the purposes of the school, is valued at $13,000.

Rev. Dr. Austin S. Garver, President of the Board of Trustees, speaking of the Museum, said:

"It is difficult to assess the value of the treasures of all kinds now in the Museum. In one sense they are priceless. Perhaps a half million dollars would not be an excessive prosaic estimate.

"Paintings constitute the most important part, many of them of the first rank, and altogether as choice a collection as can be found anywhere.

"Besides there are collections of casts, given for the most part by citizens and societies in Worcester; thousands of photographs, colonial silver, the Bancroft collection of Japanese prints, old costumes, laces, pottery, etc. There is also a valuable library."

The Museum has for its motto, "For the benefit of all the people of the City of Worcester."

Worcester Music Festival

THE WORCESTER MUSIC FESTIVAL is known in every music centre in the world. It was organized 57 years ago, and has steadily grown until the greatest artists to be heard in America, both vocal and instrumental, are none too good for its patrons.

The Worcester County Musical Association, which is the technical name of the organization, is a corporation organized under the laws of the Commonwealth of Massachusetts. Conductors, as famous in their particular line as the artists in theirs, have brought the chorus to a high

Worcester Woman's Clubhouse

state of efficiency. Dr. Arthur Mees, of New York, rehearsed the chorus this year for the seventh year and visiting artists who have had the experience of singing with a variety of choruses, claim, with one accord, that the Worcester festival choral forces cannot be rivalled on this continent. William H. Cook is president.

Some of the great artists who have sung at the festivals, not once, but some of them many years are, Madame Schuman Heink, who was the bright particular star at the Fiftieth Jubilee, Madame Gadski, Melba's incomparable voice has been heard, Nordica and Sembrich, George Hamblin, David Bispham, Campanini, Evan Williams, De Gogorza, and Ffrangeon Davies. Harold Bauer and Micha Elman have charmed audiences at piano and violin, and a galaxy of equally brilliant names adorn the records of the Association.

The first conductor of the chorus, B. D. Allen, died March 2, 1914, at his home near Boston.

Mechanics Hall, in which the festival has been given every year since its inception, is now altogether inadequate to house the audiences which wish to hear the concerts, but a new auditorium worthy of such gatherings is almost in sight for Worcester.

Every year one of the newer works is on the program, but always the festival management is true to the grand old oratorios that will never die. Sir Edward Elgar's "Dream of Gerontius" and "Caractacus" by the same composer, Granville Bantock's splendid composition, "Omar Khayyam," based on the Persian poet's works, Horatio Parker's "Hora Novissima," all were considered worthy a place on the program for one of the nights, and some of them have been repeated.

People from long distances spend festival week in Worcester and every available room in the hotels are bespoken weeks ahead.

The chorus is composed of 350 picked singers, Many of them have sung for so many years that they can sing the entire music of numerous works without once referring to their score. New voices are tested early in January and rehearsals continue from then until May, resuming in September for a last brushing up before the festival which takes place during one week, usually early in October.

Worcester Woman's Club

THE WORCESTER WOMAN'S CLUB, the most exclusive woman's organization in the city, was organized December, 1880. It met in various halls as well as in the homes of its members in the early years of its existence, but later held its meetings in Memorial Hall of the Young Women's Christian Association Building.

After several years there and, as time advanced with an ever-increasing membership, the clubwomen realized the necessity and importance of securing a hall and building of their own.

The late Stephen Salisbury gave the Club the site on which the present building stands and it was erected about 12 years ago by what is called the Clubhouse Corporation, a band of women, members of the Club, forming themselves into this body for that purpose, and the Woman's Club becoming the tenant.

The architect of the building very appropriately was a woman — Miss Josephine Wright Chapman, of Boston, and it is needless to say that she designed a clubhouse which for comfort, convenience and attractiveness is unexcelled anywhere.

With the furnishings the building cost $100,000, and as this sketch is being written the courageous women who built for themselves such a beautiful home are arranging for a carnival, the receipts of which will wipe out the small debt at present existing on the building.

The Club also published, April 11, the entire edition of the Worcester Evening Gazette. It was exclusively a Woman's Club paper, all the work, except the mechanical part, being performed by women. The editor-in-chief was Miss Arabella H. Tucker, the managing editor was Mrs. Isabella Mackenzie Tulloch, and the business manager, Miss Adah B. Johnson. All reporters, sub-editors, advertising solicitors were women. The paper was, of course, a literary and financial success.

Miss Georgie A. Bacon, of Worcester, Vice-President of the National Federation of Woman's Clubs, was president of the Worcester Club at the time the action was taken towards securing a building of its own.

The Worcester Club has a membership of 650, with 170 on the waiting list. It is larger than any individual club in Boston and is one of the most progressive clubs in Massachusetts.

Miss Arabella H. Tucker is now president of the Club.

The Playground Movement

THE MASSACHUSETTS CIVIC LEAGUE gives Worcester the first place in the state in playground development.

The playground movement in Worcester was inaugurated in 1910 by a citizens' committee which raised, by public subscription, $10,753.00 and received further contributions from the Parks Department and the School Department of the city, bringing the total up to $14,848.00. This money was spent the first year for supervision and for equipment for 20 playgrounds.

In 1911 the city established a playground department in charge of a Commission, and the playgrounds have since been continued as a part of the municipal work.

Seven public playgrounds and bathing beaches have been bought by the city, the valuation of the land and buildings of which is $157,273.

Last year the Commission maintained playgrounds in 25 centres: nine in schoolyards, seven in public parks, seven on playground property, and two on property loaned for the purpose.

The Commission employs during the summer a total force of about 70 people. It maintains two swimming beaches and two children's gardens. Swimming instruction and garden instruction for boys and girls have been given, and aside from the usual playground activities, athletic and otherwise, there has been instruction in basketry, sewing and other useful work.

For two years a play festival was held in the summer, at which each year, over 5,000 children took part. The children were brought from their various playgrounds to Fitton Field for the play festival, which was called "Taillltenn games," and the children returned to their playgrounds without one child being lost or any accident of any kind.

For two years, also the playground department has had charge of the Safe and Sane Fourth Celebration, so far as it has been conducted in parks, playgrounds and schoolyards.

The department has built and maintained a number of tennis courts which are in constant demand.

The attendance at the playgrounds in 1913 was 305,481, an average of 3,548 per session. The cost per child per session was slightly over three cents. The children's gardens had a total attendance of 17,070; the swimming beaches a total attendance of 32,784. For the use of the baseball diamonds of the playgrounds 2,720 permits were issued.

The annual expenditure for playground purposes is about $20,000 a year. The playground system of Worcester has received the highest commendation from experts in this work who have made personal visits here. Worcester playgrounds rank among the very best in the country.

George F. Booth, owner and publisher of the Worcester Gazette, is chairman of the Playground Commission, and W. Francis Hyde was supervisor until April 1, 1914, when he was succeeded by Thomas E. Holland

Lake Quinsigamond

LAKE QUINSIGAMOND or Qunnosogamang, (Indian for pickerel fishing place), is one of the most beautiful sheets of water of its size in America. It lies in a valley and stretches its length for seven miles. Its depth varies from one inch to 110 feet and its greatest width at any point is three-quarters of a mile. The greatest depth is off Temple Point.

The lake is an ideal summer resort and is surrounded by 600 cottages, and this summer colony enjoys all the delights of a summer resort while within a half hour's travel from their places of business.

Lake Quinsigamond has a splendid regatta course and many of the world's champion scullers were trained on its waters. The professional world's record was made there by Ned Hanlon about 23 years ago, for three miles with a turn. The National Amateur Regatta was held here on three different occasions and the New England Regatta many times. The famous Hotel Belmont is now the headquarters of the Motor Boat Club, and craft of all kinds and sizes belonging to its members dot the lake. About 40 years ago the varsity crews of Harvard and Yale rowed their annual races on this ideal course.

The Leavitt Machine Co., Orange, Mass.

President and Treasurer, F. A. Dexter

Among the many clubs and social organizations that are housed on the shores of Lake Quinsigamond are the following:

Quinsigamond Boat Club, Tatassit Canoe Club, Lakeside Boat Club, Washington Club, Gesang Verein Frohsinn, English Social Club, Svea Gille Association, Worcester Swimming Club, Quinsigamond Athletic Club, Young Men's Christian Association Boathouse, Worcester Motor Boat Club, Swedish Gymnasium Club, Lake View Rod and Gun Club.

Masonic Order—55,000 Strong in Massachusetts

THE MASONIC ORDER in Worcester is represented by 3,000 members and there are some 55,000 in the State of Massachusetts. The newly-erected Masonic Temple on Ionic Avenue is a grand monument to the ambition of the Masonic Order in Worcester to have a home of their own. It cost, with furnishings, $180,000.

The Masons of Massachusetts also own a beautiful home at Charlton, a few miles from Worcester, purchased several years ago.

This home was originally built as a country hotel, it is located in the midst of beautiful scenery, and on the top of the highest land in Worcester County. But this venture was not a success. The original owners expended $325,000 on the property, but it was purchased at a very greatly reduced price from the above.

Up to the present time 69 persons have been cared for. Wives, widows, mothers and daughters of masons are eligible.

The name of the corporation holding the property is "The Board of Masonic Relief of the Grand Lodge of Masons in Massachusetts."

Masonic Temple

The approximate cost of the Masonic Temple recently erected in Worcester, with the land, $175,000; the Masonic Home in Charlton, $50,000. There are in the city of Worcester at the present time six 33rd degree Masons. This is the highest point to which any Mason can attain. There are in the State of Massachusetts eighty-eight.

Odd Fellows Home, Worcester, Mass.

Worcester Odd Fellows

THERE ARE 7,400 members of the Order of Odd Fellows in Worcester County. The Odd Fellows Building on Main Street was erected in 1906, by an organization representative of the various lodges in the city called the Odd Fellows Charitable Association, of which George F. Brooks has been president since its inception. Mr. Brooks is also treasurer of the Harrington & Richardson Arms Company, one of the leading members of the National Metal Trades Association.

The cost of the building on Main Street along with furnishings was $105,000.

Odd Fellowship in the Old Bay State also owns a handsome home for aged and indigent Odd Fellows and their wives, widows, and orphans. It is situated on a beautiful eminence in Greendale, a northern suburb of the city, and is an enduring and noble charity that reflects honor upon a worthy brotherhood.

It was established through the generosity of Thomas H. Dodge, an honored citizen of Worcester, in presenting eleven acres of land for a site; the voluntary contributions of individuals and subscriptions by the various branches and organizations of Odd Fellowship, provided the means whereby the buildings were erected.

The corner stone was laid October 8, 1890, the Home was dedicated June 22, 1892, and in the Autumn of 1903, a new building, equal in size to the original structure, with rooms for 60 additional inmates, was completed. The Home which has accommodations for 110 persons, was incorporated under Massachusetts laws, June 22, 1898. The buildings and grounds are valued at $150,000 free from indebtedness and exempt from taxation.

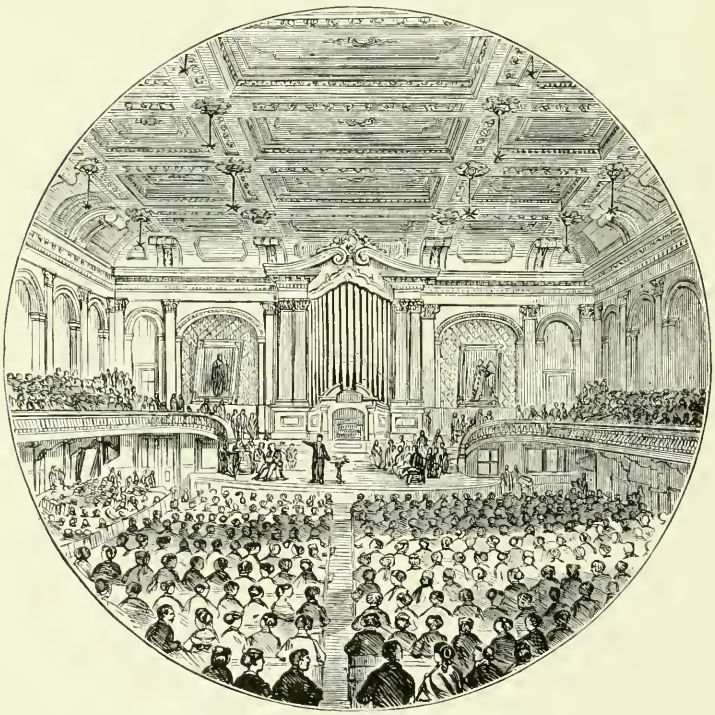
From the date of dedication in 1892 to January 1, 1914—316 inmates have been admitted. The present number of inmates is 100—70 men and 30 women.

The Home is supported by a tax levied upon nearly 59,000 brothers, comprising the membership of 242 subordinate lodges of Odd Fellows in the jurisdiction of Massachusetts, by voluntary contributions from Rebekah Lodges, and by the income from legacies and bequests of benevolent people who recognize in this work one of the grandest humanitarian projects ever attempted and successfully carried out by man.

A permanent fund, created by the Grand Lodge of Massachusetts in September, 1897, is known as the "Odd Fellows Home Permanent Fund" and now amounts to $75,000.

The superintendent and matron of the Home are Mr. and Mrs. Herbert B. Belcher.

Mechanics Hall, Worcester, Mass.



Mechanics Hall, Worcester, Mass.

Mechanics Hall

MECHANICS HALL is owned by the Worcester County Mechanics Association, organized February 5, 1842, with William A. Wheeler, Worcester's first foundryman and machinist, as president and Ichabod Washburn, the pioneer wire manufacturer, as vice-president. It was incorporated March 9, 1850, for the "purpose of promoting moral and intellectual improvement and perfecting the mechanical arts and for charitable purposes," with William T. Merrifield as president and Henry Goulding as vice-president.

The corner stone of the present building was laid September 3, 1855. This day was made a general holiday. All business was suspended and all employers and employees and the general public, together with the city government, united on that day in an undertaking that did then and in all the intervening years redound to the honor of the manufacturers and mechanics of Worcester county.

The present hall was dedicated March 15, 1857. Some questions had been raised as to the safety of the hall when crowded, and much to the the delight of the architect, Elbridge Boyden, 3,000 people filed into the hall and settled the matter at once, that the factor of safety had been well looked after. The master builder was Horatio N. Tower. Both of these were Worcester men, active members of the Association and members of the building committee.

The seating capacity of the hall was at first 2,000, but in later years this has been reduced from time to time to avoid congestion to 1,758. Mechanics Hall is known the country over for its wonderful acoustic properties and has repeatedly been pronounced by orators and singers as the equal of any known hall now in existence. During its 60 years of use its walls have resounded with the eloquence of the greatest orators. All of the star musical artists of the day have been heard there, and it is safe to say that next to the historic Faneuil Hall in Boston, Mechanics Hall is noted along political, musical, literary, scientific and social lines more than any other.

Surely its name was well chosen. It was designed and built by mechanics for a mechanical society with mechanics' money and for 60 years has maintained a library and reading room for its members and provided a meeting place for all occasions second to none.

The first cost of land and building was about $140,000. The largest single giver was Deacon Ichabod Washburn, the smaller hall known as Washburn Hall being named after him. 256 members of the Association subscribed about $44,000 and although the Association saw some very strenuous times in its early days, it has proven what can be done when employers and employees are united for their common good.

The first Mechanics Fair was held in 1848 in the hall of the Worcester County Agricultural Society. The first lecture before the Mechanics Asso-

ciation was delivered February 21, 1842, by a resident of Worcester, Elihu Burritt, well known in later years as the "Learned Blacksmith."

Truly the words of President Washburn at the dedication of the hall have come true. In his address he said:

"Here the orator will display his eloquence and the scholar his erudition, questions of momentous interest, state and national, will be here discussed. It will undoubtedly be the theatre of many strongly contested debates upon the great problems of human rights and human destiny."

In conclusion he said, in describing the building:

"Here it stands and it speaks to you to-day in tones far more eloquent than I can command, imposing and beautiful in its external elevation, the interior fills the beholder with admiration and delight. I know not but the eye of the critic may discover here and there a blemish, but if the true test of the beautiful consists in its power to please and charm the universal mind, then is ours a complete success, for rarely to our knowledge has a building been erected which has called forth such unqualified praise from all classes and conditions of men."

George H. Coates is the president of the Association.

Mechanics Hall is an enduring monument to the courage and genius of the mechanics, artisans and business men of that day. These men knew how to welcome new ideas and put them into practical use. The world to-day is benefiting by their inventions. The mechanics of more than half a century ago knew also how to make a small town like Worcester become a great city, but the means they wrought with and the results they sought were the means and results of peace, the agencies of faithful endeavor and industry, of practical sense, of equal right to others in matters of opinion and the dissemination among the people of the blessings of education and the priceless boon of literature.

The Glorious Fourth Made Safe

FOR THE PAST three years Worcester has observed a Safe and Sane Fourth of July. A band of enthusisasts has taken the dangerous cannon cracker out of the hands of the youthful boys and girls, yes, and the big boys and girls, too, and in its stead they have provided elaborate entertainment for young and old. The result has been the elimination of fatalities and the reduction to an infinitesimal percentage accidents of any kind.

Historical pageants, military processions, band concerts, sports of all kinds for all ages and nationalities, patriotic exercises in public schools have taken the place of the senseless noise and the exuberance of patriots, and young and old have been given a healthy form of expression.

Hon. Alfred S. Roe and Donald Tulloch have been president and secretary respectively since the formation of the Worcester Safe and Sane Fourth of July Association, which is one of the pioneers in America in this work and is now conducted under the direction of the city.

The American Antiquarian Society

THE AMERICAN ANTIQUARIAN SOCIETY celebrated in 1912 its 100th anniversary. It is one of the oldest national institutions in the United States and its handsome home, recently erected, is in Worcester.

In October, 1912, Isaiah Thomas, of Worcester, at that time editor and publisher of the Massachusetts Spy, with five associates, petitioned the Massachusetts Legislature to establish a society whose chief object should be the collecting and preserving of the materials for a study of American history and antiquities.

On October 24, 1812, the Society was incorporated. It was decided that beyond the reason of the residence of the founder, it was best to locate the building of the Society at an inland rather than a coast town. As Thomas said: "For the better preservation from the destruction so often experienced in large towns and cities by fire, as well as from the ravages of an enemy, to which seaports in particular are so much exposed in time of war, it is universally agreed that for a place of deposit for articles intended to be preserved for ages, and of which many, if destroyed or carried away, could never be replaced by others of the like kind, an inland situation is to be preferred; this consideration alone was judged sufficient for placing the Library and Museum of this Society 40 miles distant from the nearest branch of the sea, in the town of Worcester, Massachusetts."

The Society had exceptional opportunities to acquire material at the outset through the munificence of its founders. Isaiah Thomas is justly entitled to rank with the most liberal minded men of his period. His journalistic activity during his early manhood has placed his name high in the lists of Revolutionary patriots, his eminence as a printer had earned him the sobriquet of the "Baskerville of America." Familiarity with the work of similar institutions in Europe had long made him desirous of establishing in this country a society which should have for its great aim the collecting and preserving of the materials of national history And when the time came for the fruition of his plans, he gave liberally both money and books that the Society might have a beginning worthy of its name.

The first meeting of the Society was held at the Exchange Coffee House in Boston, November 19, 1812, when organization was effected with Mr. Thomas as president. At the following meeting in February, announcement was made of the gift of the president's own library, one of the largest private collections of America then existing in the country.

In the year 1820, through the generosity of Mr. Thomas, a building was erected, "highly ornamental as a publick edifice, and well calculated to give respectability and permanency to the Institution." It is now standing, though in a dilapidated condition, on its original site on Summer Street, Worcester.

Isaiah Thomas died on April 4, 1831. To the time of his death he manifested a keen desire to work in behalf of the Society. By the terms of his will he gave it funds for various purposes amounting to $24,000. His entire gifts, including books, land, building, and funds, amounted to about $50,000.

In 1832, two wings, each 25 by 20 feet, were erected, thus providing much needed room. Scarcely 20 years passed before this building was outgrown. In 1853, a new building 50 by 80 feet, of brick with freestone trimmings, was erected at a cost of $18,000. Enlarged in 1877 by an addition of 51 by 46 feet, at a cost of $12,700, it lasted half a century before it was outgrown.

In 1854 Stephen Salisbury, whose interest in the Society had been previously evidenced by his gift of the land upon which the building stood, was chosen president of the Society. For 39 years he served in this office. During the administration of Stephen Salisbury the Library had greatly increased. From a collection of 23,000 volumes it had become a library of 80,000 volumes in 1884. It was fortunate for the Society that it could enlist the services of so able a patron as Stephen Salisbury, Jr. In 1887, three years after his father's death, he was chosen president of the Society and remained in office until his death, in 1905. Throughout these 18 years he carried out the ideals set by his father and recorded his faith in its future by the generous bequest of his private library, a portion of his real estate and the sum of $200,000.

Waldo Lincoln, of Worcester, whose family and ancestral ties connected him in every way with the Society, was chosen president in 1907.

Clarence S. Brigham is the present librarian. There are 130,000 volumes and 70,000 pamphlets in the Society's valued possession. It is one of the great libraries of the country for students of American history and allied subjects, ranking in the field of American-printed books with the Lenox Library, the John Carter Brown Library, and the Library of Congress.

It is for its collection of newspapers that the library of the American Antiquarian Society is undoubtedly most frequently consulted. The first permanent newspaper published in this country was the Boston News Letter, established in 1704. From this date up to 1800 the Library possesses nearly 600 bound volumes of papers. As long ago as the year 1839 there were 1,251 volumes of newspapers in the library, and to-day the number totals about 7,000. The founder of the Society, Isaiah Thomas, had exceptional opportunities to acquire colonial newspapers. As editor of the Massachusetts Spy, one of the important newspapers of the country, he exchanged with the publishers of other newspapers.

Nearly all of the long line of historical scholars who have told the story of America's past have been members of the Society and gleaned many of their facts from its archives. Bancroft, Story, Sparks, Parkman, Prescott, Winsor — have been members and have taken prominent part in the meetings. Of the scientists can be named Humboldt, Schoolcraft, Gallatin, Brinton.

The membership is strictly national in its scope. Although Massachusetts is largely represented and the city of Worcester provides a disproportionate number of members in order to administer the Society's affairs, yet nearly one-third of the membership lies outside of New England.

With the increase of its funds through the bequest from Stephen Salisbury, the Society was able in 1908 to take positive steps regarding the erection of a new building. Therefore, the Society purchased a lot, formerly part of the Salisbury estate, bounded by Park Avenue, Salisbury Street and Regent Street. With an area of 60,000 square feet, in the midst of an attractive residential neighborhood, the site has met with general approval.

The building is a two-story structure of brick, with marble trimmings and a marble dome. The portico, with its marble columns, is modeled after the entrance of the first structure of the Society built in 1820. The building has a total capacity of about 250,000 volumes, and the lot is sufficiently large to allow the erection of additional bookstacks.

The corner stone of the new library was laid October 20, 1909, and was ready for occupancy in October, 1910, and cost $189,000.

It is the endeavor of President Lincoln and his associates to make the American Antiquarian Society "the greatest historical library of the country for matters pertaining to the history of the Western Hemisphere. To-day, poor in money as we have been, our library is so rich in material that no historical writer can afford to neglect it. All we wish is the means to complete what others have so well begun."

Worcester Society of Antiquity

THE SOCIETY OF ANTIQUITY was incorporated in April, 1877. The purposes of the Society are to record and preserve facts, books, and articles relating to and illustrative of the history of Worcester. The Society owns real estate, free from incumbrance, to the value of about $60.000, and has, in addition, invested funds amounting to about $20,000. The building at Armory Square, occupied exclusively by the Society, contains a very interesting museum of relics of every description, relating to the history of Worcester and illustrating much of the history of the New England country since the time of the Indians. This museum is one of the most interesting and valuable of its kind in existence.

In this building is also the library of the Society containing about 25,000 volumes, many of these volumes being particularly useful to searchers for local historical and genealogical information. The Society has a very fine record of publication of ancient records, as well as its own proceedings, containing much valuable local historical matter.

The museum of the Society is open to the public every afternoon except Sunday, from one o'clock to five. Charles T. Tatman is president of the Society and Ellery B. Crane, librarian.

Employers Association of Worcester County

It is the Latest formed Organization and Starts Life Robustly with a Unique Creed

THE LATEST industrial organization to be established in Worcester is the Employers Association of Worcester County. Its creed has appealed to many employers in all lines of industry and they have associated themselves with the organization.

The officers and board of management are representative men of Worcester, employing thousands of workers. Briefly speaking, the aim of the Association is to foster the principles of the Open Shop and create the best conditions in all lines of industry in this county so that there may be a "strikeless Worcester."

The Officers and Board of Managers are

President, Geo. I. Alden — *Vice-Presidents*, E. J. Cross, Alfred Thomas

Secretary, Donald Tulloch — *Treasurer*, Arthur W. Beaman

Board of Managers

Clinton S. Marshall, A. E. Newton, Earle C. Hopkins, F. R. Batchelder, J. J. Higgins, John W. Harrington, Chas. E. Hildreth, John P. Coghlin, O. S. Kendall, Sr., Geo. W. Kilmer, Geo. M. Thompson.

The headquarters of the Association are at the Worcester Labor Bureau, Worcester, Mass.

This is the Creed of the new Association:

1 To assist its members in their right to manage their respective businesses in such lawful manner as they may deem proper.

2 To prevent industrial strife.

3 To investigate and fairly adjust, through the proper officers or committees, any question arising between members and their employees.

4 To foster a feeling of confidence and goodwill on the part of employees in their attitude towards their employers, assuring them that their interests are being studied and conserved.

5 To make the headquarters of the Association the place where workers may discuss complaints or suggestions for their betterment with the Secretary, who shall act as intermediary, and endeavor to correct abuses and eliminate trouble wherever found.

6 To foster the principle of the "Open Shop."

7 To operate a Free Employment Office, where worthy workers may secure employment.

8 To assist its members in securing efficient and desirable employees.

9 To discuss Industrial, Legislative and Economic conditions of general interest.

10 To foster among its members a spirit of co-operation, friendliness and progressiveness.

Worcester Natural History Society

THE FORMATION of the Worcester Natural History Society was first contemplated in 1852 as a means of improvement to the young men of Worcester. One of the first steps taken was to confer with the Young Men's Christian Association, which had been lately formed, with a view to a union of the two, as their objects seemed to be substantially the same, but owing to a clause in its by-laws that was not considered expedient.

A meeting held in August, 1852, under the chairmanship of Hon. George F. Hoar, resulted in the formation of a society under the name of the Young Men's Library Association. The object aimed at was "The improvement of the young men of the city of Worcester by affording them intellectual and social advantages by the maintenance of a library, reading room and such courses of lectures and classes as may conduce to this end."

The Association was fully formed in December by the election of Hon. Francis H. Dewey, president; George W. Bentley, vice-president; Hon. George F. Hoar, corresponding secretary; Nathanial Paine, recording secretary, and Henry Woodward, treasurer, along with 14 directors. The Association was incorporated April 16, 1853. The library was open to the members and the public June 18, 1853, the fee of $1 per year being assessed for the privilege of using it At the close of that year the committee reported that 430 persons had availed themselves of its advantages to the extent of taking out 8,620 books or on an average of six times a year for every book in the library

A reading-room was early established in connection with the library, and although poorly supplied in comparison with the collection of newspapers now open at the Public Library, was freely used by members.

An association known as the Worcester Lyceum of Natural History had been formed in 1825 and made a small collection of minerals, birds, shells and other specimens of natural history. These have increased until now the building at the corner of Harvard and State streets houses thousands of specimens of animal and plant life and minerals. It is also the centre of education in natural history, for many classes meet there where the lessons may be illustrated by actual specimens.

The present president is Dr. Lemuel F. Woodward, and Mrs. Ella L. Horr is an ideal custodian, always ready to help the seeker after information.

Worcester Agricultural Society

THE WORCESTER AGRICULTURAL SOCIETY, incorporated in 1818, has from its formation been one of the most active of the many societies in the town and city. Its annual fairs or cattle shows, as they were formerly called, have called large numbers of visitors from all parts of the state. For many years these fairs were held on the Common, near the town and city hall. Since 1853 they had been held on the grounds of the Society on Agricultural Street and now on the fair grounds at Greendale, and have become much wider in their scope with special attention to the exhibition and trotting of racing horses, and this feature has undoubtedly increased the attendance largely.

For the past score of years the annual fair has been held in connection with the New England Agricultural Society and is called the New England Fair, one of the leading gatherings of its kind in the state.

The president of the Society is Walter D. Ross, one of the best-known business men of Worcester.

Worcester County Horticultural Society

IN 1840 the Worcester County Horticultural Society was organized. The following March a petition for incorporation was granted by Governor Davis and March 3, 1842, the Society was incorporated. The object of the Society was to advance the science and encourage and improve the practice of horticulture. The membership fee was $1. By-laws were adopted May 10, 1843, and in 1846 the membership had grown to 300. A change in the membership was made permitting a man and wife the privilege of membership as well as free admission to the exhibits and free use of the library.

With every succeeding year since its organization, the Society has been one of immense value to farmers and florists, and their weekly exhibitions are looked forward to with much pleasure. The Society has had many eminent men as presidents. Edward W. Breed, of Clinton, is the present head of the Society, and the librarian, Miss Lucy M. Coulson.

The Society now numbers 644 members.

Worcester County Incorporated Nearly 200 Years Ago

WORCESTER COUNTY was incorporated April 2, 1731. The Court House at Worcester is considered one of the finest in the state and to-day would cost to build and equip from $750,000 to $800,000. The Worcester Jail and House of Correction would cost to build to-day from $500,000 to $600,000. The County also has training school buildings at Oakdale which are valued at $150,000, and a Jail and House of Correction at Fitchburg which would cost $350,000.

The County is free from debt and December 31, 1913, had a balance in the treasury of $49,249.98, being the only large county in the state making this showing.

The population of the County to-day is 450,000, census of 1910 was 400,000; valuation in 1910 was $324,000,000; to-day it is probably $400,000,000.

The population of Massachusetts according to the 1910 census was 3,366,416. It is probably 3,500,000 by this time. The state is divided into 14 counties, and Worcester County, has two cities, Worcester and Fitchburg, and 57 towns, which at that date had a total population of 399,657.

George W. Cook of Barre, is chairman of the Worcester County Commissioners.

The Garden City

REV. DR. ROBERT J. FLOODY is one of the pioneers in the United States in establishing garden cities. He has carried out the letter as well as the spirit of settlement work, for he lives in the very centre of his work on the East Side. His text for this practical sermon which he is working out with such excellent success is "The Boy" with a capital B, and with the material at hand he has in the making many of the city fathers of the future.

Dr. Floody has secured by gift many an unsightly patch of land which he and his boys and girls have transformed with the aid of some fertilizer, seed and endless patience and work, into beauty spots, and while they are cultivating flowers and vegetables they are unconsciously cultivating themselves. Each year there are caucuses and political gatherings; mayors and aldermen are elected as well as a police chief and patrolmen. Offenders are punished in the way to hurt most the particular case in hand.

Dr. Floody has been asked to explain his system in many cities throughout the United States and Canada. He is ably seconded in his work by Mrs. Floody.

John D. Hibbard
Commissioner, National Metal Trades Association

Worcester's Hostelries

THE HOTEL HISTORY of Worcester is an interesting one, for ever since the organization of the town, a period of about 180 years, there has been one kept upon the location of the present Bay State House. On the site of the Lincoln House, now Poli's Theatre, a hotel or inn was kept from 1732 to 1784. In 1835 the Lincoln management, which occupied mostly the site of the "King's Arms" structure, was converted into a hotel. A hotel of prominence also occupied the site of the present Walker Building for nearly a century.

The Exchange Hotel building, near Lincoln Square, has been occupied for a public hostelry since 1785, and makes the third place in the city occupied for that purpose for over 100 years. At the old Jones tavern building, still standing at New Worcester, a hotel was kept from 1760 to 1835. Near the corner of Pleasant and Moore streets, at Tatnuck, there was a hotel for many years from 1775.

An old time inn was also kept on Lincoln Street prior to 1797. About 80 years ago an inn called the Cow Tavern stood near the corner of Salisbury and Forest streets and one was kept for many years during the last century near the Smmit at the north end. The ancient three-story structure, until recently at the corner of Salem and Madison streets, and occupied as a tenement house, originally stood on the site of the Bay State House, being the first hotel then rebuilt in 1722, and remaining there over 90 years. The building was enlarged and altered several times and in 1854 it was removed to give place to the present structure, open to the public in 1857.

The old Exchange Hotel was first erected in 1784, and has since been occupied by many prominent men of the country. For more than half of the first century of this house, it was the leading hotel of the town, and the one place where all distinguished travelers stopped to refresh "man and beast." General Washington took his breakfast at this house on his passage through Worcester in 1789, and Lafayette also stopped there at one time.

The Exchange Hotel is the oldest hotel in the city, though hotels were first started in other localities before this one was built. This structure, which still retains very much the same outward appearance as it always has borne, minus the piazza and a few slight changes, was erected for a hotel in 1784 at or shortly after the close of the Revolutionary War. It was built by Nathan Patch, who was a very extensive owner of land. He came from Ipswich to Worcester in 1760. He resided and kept a hotel here for several years. The first name by which this public house was for many years known was the patriotic one of United States Arms. Mr. Patch relinquished the hotel about 1793 to William Barker

"Exchange Coffee House" and general Stage Office

who kept it until 1803 from which time Samuel Johnson kept it until he died in 1807.

Then Col. Reuben Sikes from Connecticut, the celebrated stage proprietor, purchased the estate and managed it until he died in 1824. He made this hotel *the leading one in Worcester.* It was the grand centre of the arrival and departure of the stages of all the different lines connecting the town with all sections of the county and state. Col. Sikes and his partner, Levi Pease, were proprietors of the first stage line, Boston and New York via Worcester, which they began to operate 1783. Sikes changed the name of the hotel to Sikes Coffee and Stage House. They continued to 1866. Samuel B. Thomas from Brookfield, kept the hotel sixteen years. He changed the name to Thomas Exchange Coffee House and later to Thomas Temperance Exchange. His son-in-law, P. W. Waite, succeeded him, who ran the place fifteen years and called it just Temperance Exchange and ever since 1855 or 1856 has been known as Exchange Hotel. Stephen Taft and Samuel Banister were the next proprietors. Mr. Banister ran it until 1865.

Russell Lamb had the property eight years until 1874 and Aaron Parker, Luke Baker and W. F. Weeks to 1878. E. L. Kennen took it and kept it until 1887. This hotel was the leading hotel of the town and county. Distinguished travelers invariably stopped here.

General Washington breakfasted at the house October 23, 1789, while on his tour through New England. General Lafayette slept in the house in Room No. 15, now changed to No. 35, and he also breakfasted in the house the morning of June 15, 1825.

A sign which bore the inscription in gilt letters attracted much attention from passers by, reads, "This Hotel has been open to the public continuously since 1784."

Washington's Visit to Exchange Hotel

On June 23, 1775 Washington left Philadelphia on horseback and traveled in that manner to Cambridge, Mass. He arrived in Worcester early in the morning and proceeded to the Exchange Hotel where he remained for breakfast.

General Washington revisited Worcester in 1789 and remained at the Exchange Hotel, then known as the United States Arms. Information was that Washington would be in town the next morning. A large number of the most respected citizens paraded before sunrise on horseback, and went as far as the Leicester Line and welcomed him and escorted him into the town. He stopped at the United States Arms. The desk on which he wrote a letter is still preserved at the Exchange Hotel as a historical memento of Washington's visit at the place. After breakfast he proceeded on his way to Boston on horseback.

The old hotel which stood at the corner of Main and Mechanic streets was built in 1791, and three structures have occupied the site.

South Mere, Elm Park

The one first called the United States was built in 1818, and was the leading stage house of the times. It was a common thing before the opening of the railroads to see from 30 to 40 stages arriving and departing from in front of this place.

The Bancroft Hotel

IT'S A FAR CRY from the early Worcester inns of 1722 and the old Exchange Hotel in which George Washington stopped on his memorable visit to Worcester to the modern hostelry on Franklin Street. It is claimed for the Bancroft Hotel that it is the pioneer Metropolitan Hotel of the world, typifying results accruing from co-operative construction. It is also claimed that a new world's record has been established for the operation of a 500 horsepower plant with a total consumption of less than five tons of coal a day of 24 hours. This for a 300-room hotel costing over one million dollars.

The length and breadth of America has contributed to the equipment of this hotel, and in it are to be found the most modern and thoroughly tested machinery for its gigantic housekeeping on a sort of glorified scale. The ease with which every luxury one can think of and some which are not dreamed of, is forthcoming, is almost uncanny. To begin with, in the kitchen, which is the heart of every home, the centre from which issues the material for the making of brain and brawn, the culinary activities are carried on under the most approved conditions. There are fans in motion continuously to remove smoke, steam, hot air and odors which are carried up and discharged above the roof.

The ventilation system means not only supplying sufficient fresh air, but supplying a superior quality of air, washed of its impurities until it is as fresh as the atmosphere after a rainstorm, and heated or cooled to the most desirable temperature. Meanwhile the warm, stale air has been removed. A vacuum plant eliminates the dust problem. A refrigerating plant sends brine through pipes into the various rooms to be cooled, and by it also the ice cream is made and hardened, also the rapid freezing of water in molds for the serving of grape fruit. This has been pronounced by competent engineers to be the very last word in hotel refrigeration.

The making of ice is another process, made in crystal-like blocks from distilled water furnished by the condensation of the steam used in the kitchen equipment, requiring high pressure steam in jacket kettles, cooled, filtered and pre-cooled before entering the cans.

To the Bancroft falls the distinction of being the first hotel in the world to install the icy-hot beverage containers, a vacuum pitcher which keeps its contents as hot as when put in, indefinitely, and cold if put in cold. The pitchers are attractive table service. Rollaway screens operated like a rolltop desk are used throughout the building.

Among the electric motor appliances in the kitchen in the basement are potato peelers and washers, soup strainers, dish washers, food choppers and ice cream freezers. The print shop, also in the basement, includes a

motor-driven pony press and cutter. The laundry on the top floor has motors to drive the various machines. There are two plunger passenger elevators, one for employees and one for freight, two of shorter rise for the handling of freight and ashes. Dumb waiters are operated on the same principle.

The interior finish and decoration of the hotel are the delight of its patrons. Table linen and service are choice and distinctive, the table linen having been made of the heaviest linen, of special design by a firm in Dunfermline, Scotland, the birthplace of Andrew Carnegie.

Many of those who financed the hotel are men engaged in the metal trades in Worcester, and some of them had a part in its construction.

Chas. S. Averill is president of the Bancroft Hotel Company, and under his direction the hotel has brought to Worcester a distinctly metropolitan atmosphere.

As one enters the lobby the effect of the Georgian design, expressed in fluted columns of marble which support a ceiling of white and gold, is strikingly beautiful. The tiled floor is covered with a half dozen handsome rugs woven in subdued colors, and a sympathetic note is struck in a splendid tapestry suspended on the wall to the left. Large urns and palms add an atmosphere of warmth and color against the blue veined marble pillars and casings and the interchanging of white and gold decorations. Great arm chairs and comfortable settles are placed at convenient points and also in the balcony overlooking the lobby. The amaranth figured velvet carpet runners on this balcony and the harmonizing tones of curtains which span the large windows fronting Franklin Street are seen in regal splendor under the effects of twelve chandeliers which flood the lobby with light. The fixtures are in antique gold metals and are inverted. To the right of the entrance is a fireplace of simple design. In a niche, breaking the severity of the wall above the mantle, is the bust of George Bancroft, the American historian and native of Worcester, for whom the hotel is named.

To the left of the lobby is the main dining room, carried out in Louis XVI period of architecture. Splendid columns in white and gold support a ceiling of intricate design in cream, gold and buff tones. The massive chandeliers are fashioned after the candelabra of that period. The furnishings are of mahogany.

The ball room is one of the most beautiful rooms in the building. Its color scheme is ivory and gold with draperies of gold and mauve. A succession of mirrors are separated by green tinted lattice work. A balcony or messanine floor surrounds the room, and the clustered lights of the chandeliers are encased by thousands of glass prisms which flash all the colors of the spectrum.

Leading from the balcony is the ladies' reception room finished in Colonial style, known as the Adams period. The curtains are of Nile green with under draperies and buff shades of silk taffeta. On one side of the main entrance are stairs descending to the Colonial dining room and on the other side to the grill room, bar, barber shop, etc.

The sample rooms for the use of commercial travelers are a fine example of convenience and the 320 guests' rooms are marvels of artistic treatment in design and coloring.

The bridal suites must be seen to be appreciated. They are splendid specimens of modern art in hotel building. The bedsteads and dressing tables are ivory finished with designs of carved roses in relief against a background of woven cane. There are no other decorations besides the garlands of roses and festoons of entwined leaves. These are enhanced by carpets of deep rose, and walls and ceilings of gray and light buff.

The lighting of this hotel has been worked out with mathematical precision, for a combination of best service and attractive designing. The globes of the lamps in the main diningroom are of pure alabaster and the exterior system of lighting gives a brilliant illumination to Franklin and Portland streets.

The Bancroft Welcome—Make Yourself at Home

Let the guest sojourning here know that in this home our life is simple. What we cannot afford we do not offer, but what good cheer we can give, we give gladly. We make no strife for appearance's sake. We will not swerve from our path.

Know also, friend, that we live a life of labor, that we may not neglect it. Therefore, if, at times, we separate ourselves from you, do you occupy yourself according to your heart's desire, being sure that no slight to your presence is intended.

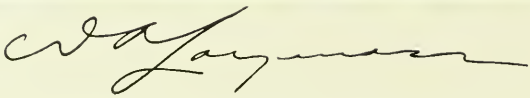
For, while you are with us, we would have you enjoy the blessings of a home, health, love and freedom, and we pray that you may find the final blessing of life—peace.

We will not defer to you in opinion, or ask you to defer to us. What you think you shall say, if you wish, without giving offense. What we think we also say believing that the crystal, Truth, has many aspects, and that Love is large enough to encompass them all.

In this house you may meet those who are not of your own sort. They may differ from you in nationality, birth, position, possessions, education, and affinity. But we are maintaining here a small part of the world's great future democracy. We ask you, therefore, courtesy and tolerance for all alike.

And, on these stern terms, though you be young or old, proud or plain, rich or poor, resting here you are a partaker of our love, and we give you glad welcome.

The chief hostelries and clubs in Worcester are The Bancroft, The Warren, Bay State House, Hotel Pleasant, New Park Hotel, The Standish, Worcester Auto Club, Worcester Club, Tatnuck Club, State Mutual Restaurant, Worcester Country Club, Commonwealth Club.



President, National Metal Trades Association

National Metal Trades Association

Why is it? What is it? Who is it? What does it do?

THE NATIONAL METAL TRADES ASSOCIATION was organized in 1899 by a number of representative manufacturers who realized the absolute necessity for national united action on the part of employers in handling the unjust collective demands of organized labor and in treating with the labor question in general.

Its declaration of principles is as follows:

We, the Members of the National Metal Trades Association, declare the following to be our principles, which shall govern us in our relations with our employees:

Since we, as employers, are responsible for the work turned out by our workmen, we must have full discretion to designate the men we consider competent to perform the work and to determine the conditions under which that work shall be prosecuted, the question of the competency of the men being determined solely by us. While disavowing any intention to interfere with the proper functions of labor organizations, we will not admit of any interference with the management of our business.

Disapproving absolutely of strikes and lockouts, the members of this Association will not arbitrate any question with men on strike; neither will this Association countenance a lockout on any arbitrable question unless arbitration has failed.

No discrimination will be made against any man because of his membership in any society or organization. Every workman who elects to work in a shop will be required to work peaceably and harmoniously with all his fellow employees.

The number of apprentices, helpers and handymen to be employed will be determined solely by the employer.

Employers shall be free to employ their work people at wages mutually satisfactory. We will not permit employees to place any restriction on the management, methods or production of our shops, and will require a fair day's work for a fair day's pay.

Employees will be paid by the hourly rate, by premium system, piece work or contract, as the employers may elect.

It is the privilege of the employee to leave our employ whenever he sees fit and it is the privilege of the employer to discharge any workman when he sees fit.

The above principles being absolutely essential to the successful conduct of our business, they are not subject to arbitration.

In case of disagreement concerning matters not covered by the foregoing declaration, we advise our members to meet their employees, either

Herbert H. Rice, Indianapolis
Nominated for the Presidency of the N. M. T. A. for 1914-1915

individually or collectively, and endeavor to adjust the difficulty on a fair and equitable basis. In case of inability to reach a satisfactory adjustment, we advise that they submit the question to arbitration by a board composed of six persons, three to be chosen by the employer and three to be chosen by the employee or employees. In order to receive the benefits of arbitration, the employee or employees must continue in the service and under the orders of the employer pending a decision.

In case any member refuses to comply with this recommendation he shall be denied the support of this Association unless it shall approve the action of said member.

Hours and wages being governed by local conditions shall be arranged by the local Associations in each district.

In the operation of piece work, premium plan or contract system now in force or to be extended or established in the future, this Association will not countenance any conditions of wages which are not just, or which will not allow a workman of average efficiency to earn at least a fair wage.

Adopted June 18, 1901.

Officers and Administrative Council

The Officers and Administrative Council of the National Metal Trades Association are:

President, W. A. LAYMAN,
Wagner Electric Mfg. Co., St. Louis, Mo.

First Vice-President, L. H. KITTREDGE,
The Peerless Motor Car Co., Cleveland, Ohio

Second Vice-President, HERBERT H. RICE,
The Waverley Co., Indianapolis, Ind.

Treasurer, F. C. CALDWELL,
H. W. Caldwell & Son Co., Chicago, Ill.

Commissioner, JOHN D. HIBBARD,
People's Gas Building, Chicago, Ill.

Secretary, HOMER D. SAYRE,
People's Gas Building, Chicago, Ill.

GEO. MESTA,
Mesta Machine Co., Pittsburgh, Pa.

STEVENSON TAYLOR,
Quintard Iron Works, New York

W. M. TAYLOR,
The Chandler & Taylor Co., Indianapolis, Ind.

C. E. WHITNEY,
Whitney Manufacturing Co., Hartford, Conn.

P. O. GEIER,
The Cincinnati Milling Machine Co., Cincinnati, Ohio.

JOHN W. O'LEARY,
A. J. O'Leary & Son Co., Chicago, Ill.

M. H. BARKER,
The American Machine & Tool Co., Boston, Mass.

F. K. COPELAND,
Sullivan Machinery Co., Chicago, Ill.

JOHN W. HARRINGTON,
Harrington & Richardson Arms Co., Worcester, Mass.

PAUL B. KENDIG,
The Seneca Falls Manufacturing Co., Seneca Falls, N. Y.

J. H. SCHWACKE,
Wm. Sellers & Co., Inc., Philadelphia, Pa.

HENRY D. SHARPE,
Brown & Sharpe Manufacturing Co., Providence, R. I.

W. H. VAN DERVOORT,
Root & Van Dervoort Engineering Co., East Moline, Ill.

Branch Offices

National Metal Trades Association

BOSTON, MASSACHUSETTS,
309 Oliver Building, 141 Milk Street.
Secretary, W. H. WEINGAR.

CHICAGO, ILLINOIS,
139 North Clark Street.
Secretary, PAUL BLATCHFORD.

CINCINNATI, OHIO,
705 Elm Street.
Secretary, JOHN M MANLEY.

CLEVELAND, OHIO,
310 New England Building.
Secretary, PHILIP FRANKEL.

HARTFORD, CONNECTICUT,
323 Capitol Avenue.

Secretary, J. H. LAY.

INDIANAPOLIS, INDIANA,
218 State Life Building.

Secretary, A. J. ALLEN.

NEW HAVEN, CONNECTICUT,
317 Malley Building.

Secretary, GEORGE P. STEPHAN, JR.

NEW YORK AND NEW JERSEY,
30 Church Street,
New York City.

Secretary, H C. HUNTER.

PITTSBURGH, PENNSYLVANIA,
503 Second National Bank Building.

Secretary, D. H. CREIDER.

RHODE ISLAND,
420 Butler Ex., Providence, R. I.

Secretary, JOSEPH A. HOLLAND

ST LOUIS, MISSOURI,
Odd Fellows Building.

Secretary, J. F. HEM.

SPRINGFIELD, MASSACHUSETTS,
12 Court House Place.

Secretary, F. F. SQUIRE.

TRI-CITY BRANCH,
Moline Theatre Building,
Moline, Illinois.

Secretary, H. A. JANSEN.

WORCESTER, MASSACHUSETTS,
44 Front Street.

Secretary, DONALD TULLOCH.

M.H.Barker

Melville H. Barker—the National's Grand Old Man

MELVILLE HAZEN BARKER was born at Bridgton, Maine. When about three years old his family moved to Waukesha, Wisconsin, and four years later they moved to Chicago, where he attended the grammar and high school. He then attended the State University at Madison, Wisconsin, taking the architectural course for one term.

From there Mr. Barker went to work in an architect's office in Chicago where he stayed until the death of his father, a year later, when the family moved to Lawrence, Mass.

Mr. Barker entered the repair department of the Everett Mills, which was formerly the old Lawrence machine shop, as assistant to the mechanical draftsman. From there he went to Franklin, N. H., and started a picture frame and furniture business, fitting up his shop himself, and had just got well started when the building and everything he had was burned. He again returned to Lawrence and commenced work at the Atlantic Cotton Mills, in the repair department, as second hand. During this period he married Sarah A. Winchell, of Acton, Maine. Three children were born to them.

In 1874 he accepted a position as mechanical engineer with the American Tool & Machine Co., of Boston, which position he held for 20 years, when he was made general manager of the company, which office he now holds.

About 1897 the National Metal Trades Association was formed, and Mr. Barker became a charter member and was elected on the Administrative Council that year. He has been a member of that governing body ever since.

After serving one year as vice-president, he was elected president in March, 1907. At the expiration of his term of office he was made an honorary member of the Administrative Council, which office has been tendered to him every year.

Mr. Barker is a member of the Massachusetts Charitable Association of Boston, Boston City Club, Boston Engineers Club, Boston Art Club, The Engineers and Machinery Clubs of New York, the Masons, Odd Fellows and Knights of Honor.

His sound advice, genial companionship and steadfast friendship have endeared him to the entire membership, which has knighted him the Grand Old Man of the National.

The National Machine Tool Builders Association

THE NATIONAL Machine Tool Builders Association was organized in New York City on June 12, 1901, at the Waldorf-Astoria Hotel.

Its Charter members were:

American Tool Works Co., Cincinnati, Ohio
P. Blaisdell & Co., Worcester, Mass.
Bradford Machine Tool Co., Cincinnati, Ohio
W. P. Davis Machine Co., Rochester, N. Y.
Draper Machine Tool Co., Worcester, Mass.
Fairbanks Machine Tool Co., Springfield, Ohio
Flather & Co., Inc., Nashua, N. H.
Greaves, Klusman & Co., Cincinnati, Ohio
Hamilton Machine Tool Co., Hamilton, Ohio
Hendey Machine Co., Torrington, Conn.
R. K. LeBlond Machine Tool Co., Cincinnati, Ohio
Lodge & Shipley Machine Tool Co., Cincinnati, Ohio
Prentice Bros Co., Worcester, Mass.
Rahn, Mayer & Carpenter Co., Cincinnati, Ohio
F. E. Reed Co., Worcester, Mass.
Schumacher & Boye, Cincinnati, Ohio
Springfield Machine Tool Co., Springfield, Ohio

Its membership now totals 170 machine tool concerns.

Its first officers were:

President, Joseph Flather, Flather & Co., Inc.
First Vice-President, William Lodge, Lodge & Shipley Machine Tool Co.
Second Vice-President, W. P. Davis, W. P. Davis Machine Co.
Treasurer, Enoch Earle, P. Blaisdell & Co.
Secretary, P. E. Montanus, Springfield Machine Tool Co.

Its present officers are:

President, W. A. Viall, Brown & Sharpe Mfg. Co., Providence, R. I.
First Vice-President, J. B. Doan, American Tool Works Co., Cincinnati, Ohio.
Second Vice-President, D. M. Wright, Henry & Wright Mfg. Co., Hartford, Conn.
Treasurer, A. E. Newton, Reed-Prentice Co., Worcester, Mass.
Secretary, Chas. L. Taylor, Taylor & Fenn Co., Hartford, Conn.
General Manager, Chas. E. Hildreth, Whitcomb-Blaisdell Mch. Tool Co., Worcester, Mass.

Its conventions are held semi-annually, the fall annual convention in New York city by constitution, the Spring semi-annual in places selected by ballot.

The purpose of the Association is purely educational and constructive. Educational in the presentation, discussion and study of subjects strictly germane to the industry, such as "the use of heat treated gears and machine tools" presented last fall, also the development of cutting tools, besides all the varied economic problems of shop management. constructive in the study and formation of apprenticeship and uniform cost systems which have been largely adopted by its members. But above and beyond all, the Association has brought competitors into a close personal and friendly relation, which, as the acquaintance grows, immeasurably dispels old distrusts and antipathies and is increasingly breeding confidence and respect.

National Founders Association

THE NATIONAL FOUNDERS ASSOCIATION was organized at the Hotel Imperial, New York, January 28, 1898, by a small group of foundry proprietors who were of one mind in the belief that the only way to protect their interests was through co-operation in an organization, which they proceeded to establish. At the time the National Founders Association was started, the National Iron Molders Union had been in existence for 40 years and had been constantly growing more powerful, and the number of non-union or open shop foundries in the United States was exceedingly limited.

Many firms which refused to submit to the unjust dictation of the Molders Union had been financially ruined and put out of business, and only foundries which were exceedingly strong financially and well entrenched otherwise dared to oppose the Molders Union single handed.

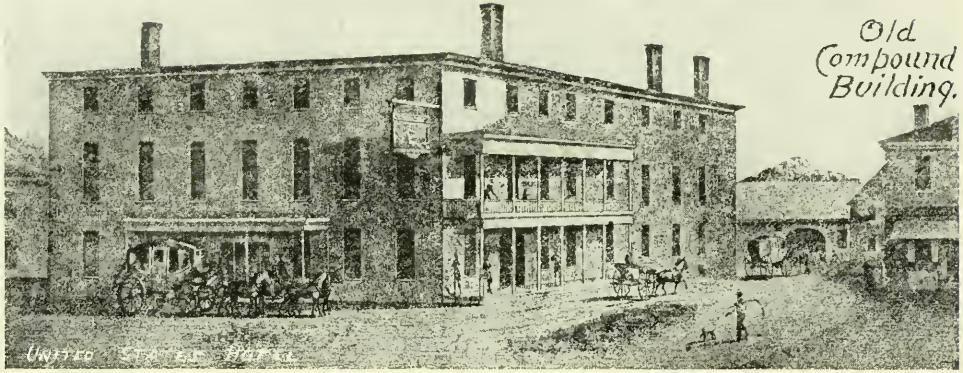
During the early years of its history, practically all of the members of the Founders Association conducted union shops, but the Open Shop movement has since prevailed, mainly as the result of the work of the National Founders Association.

At the present time there are 532 foundry plants, listing about 30,000 molders, core-makers and molding machine operators, and these, along with cupola tenders, molders' helpers, chippers and laborers, would run up into hundreds of thousands of workmen employed by this Association's members. The General Electric Co., all of whose foundries are in the National Founders Association, alone employ a total of 80,000 men.

The principles of the National Founders Association are practically the same as those of its sister organization, the National Metal Trades Association.

The officers for 1913-14 are:

President, William H. Barr, Buffalo.
Vice-President, Otto H. Falk, Milwaukee.
Commissione·, A. E. McClintock, Chicago.
Secretary, J. M. Taylor, Chicago.



Old United States Hotel, Worcester, Mass.

Worcester Boys' Club

THE WORCESTER BOYS' CLUB was organized in 1889 and incorporated in 1893 for the "purpose of maintaining rooms for the improvement of the social, physical and mental nature of boys."

Until 1906 it had no building of its own and carried on its work in rented rooms. Then a building, which had been a sort of wayfarer's lodging house, was bought and in 1907 it was remodeled and an addition built for the purposes of the Club, which takes hundreds of boys of the poorer class off the streets and then guides them to their betterment—socially, physically, mentally and morally.

In the building at Madison Square are game rooms, a small gymnasium, a basketball court, a small auditorium, reading rooms, and rooms for educational and group club purposes. Its activities include:—gymnasium instruction, shower baths, athletic and basketball leagues, a savings bank, story-telling, educational and industrial classes, group clubs, talks and entertainments. All its instructors and workers are trained men and women. Its physicians examine the boys and in co-operation with the District Nursing Society and the Associated Charities, and by the use of its own gymnasium, physical ailments and ills are corrected and poorly-nourished boys properly fed.

The Boys' Club attracts boys to it, not because they want to learn how to build up and to care for their bodies, or to bathe, or to read good books, particularly, or to learn anything, or to be made into the right kind of men, citizens and fathers, but for fun and recreation and companionship with others. But in getting their fun, they assimilate other ideas and develop a desire for the gymnasium, the library, the educational classes and the other activities of the club, which are of so much benefit to them.

The club is non-sectarian. All boys are welcomed regardless of race, color or creed. There are 23 nationalities with all shades of religious belief, all playing and working in harmony and with common "club spirit."

The building is used to its limit of usefulness, and is overcrowded. At the time this article is being written, a movement of the citizens is under way to raise money for the erection of a modern and adequate plant, which, doubtless, will meet with the success it deserves.

The officers of the club are: President, Reginald Washburn; Vice-President, Henry L. Miller; Secretary, Mrs. Charles M. Thayer; Treasurer, Ernest G. Adams; and they, with Maurice F. Reidy, George A. Gaskill, Harry G. Stoddard and Jerome R. George, make up its governing board. David W. Armstrong is the efficient superintendent.

"Norton Safety First Association"—First of its Kind

THE "NORTON Safety First Association," inaugurated March 20, is one of the first organizations of the kind to be established in the United States. It is in line with many other measures of a beneficial character for the benefit of workmen, taken by this member of the National Metal Trades Association and in common with other firms. It is work of this nature which the Metal Trades Association has been doing for years, and the Norton Co. and Norton Grinding Company are to be congratulated in taking the initiative in organization of this society, which must be of great benefit to the workmen in eliminating accidents, as well as to the firms.

For a number of years the National Metal Trades Association has performed yeoman service in this respect, and even had its safety factory inspector devote several years in visiting every firm connected with the Association throughout the United States and Canada, inspecting their workshops, reporting on the same and making suggestions for the prevention of accidents.

Charles L. Allen was elected president of the new society and every Norton employee who belongs will be furnished with a booklet containing 20 safety rules, all of which are of extreme importance in every workshop and factory. It does not cost the employee anything to belong to the society.

Rewards are to be offered by the Norton Co. and Norton Grinding Co. for special services, for valuable safety suggestions, or for actual prevention of accidents.

The Norton Safety Rules are so applicable to all employees that we reprint them here for the benefit of those who may desire to adopt them:—

Be careful at all times. You may injure yourself or others by carelessness.

Use extra care wherever you see a red disc.

Report any dangers you see to your foreman.

If there are any safety devices or guards on your machine, be sure they are in place before starting.

Never start a machine until you are sure everything is in order.

Always wear goggles when instructed to do so.

Do not wear clothing with ragged sleeves. These may get caught in machinery.

Do not oil shafting while in motion, without orders from your foreman.

Wrestling or fooling is strictly forbidden.

You are strictly forbidden to throw anything out through windows.

Before getting on any staging, make sure that it is strong enough to hold you.

Do not get on or off an elevator while it is in motion.

Do not use a ladder that has no safety points or feet.

Do not use tools with mushroomed or burred ends.

Do not use hammers with cracked or broken handles.

Do not pile material so that it can fall.

Throw all waste and rubbish into cans provided for that purpose.

Protect the property against fire. A fire in this plant may put every man out of work.

Help keep the plant clean.

If you are injured, no matter how little, report to your foreman at once. Neglect of proper attention to small injuries may cause blood poisoning and a loss of wages to you.

How the Big Men Dare and Do

We know the big men dare, and the big men do; they dream great dreams, which they make come true. They bridge the river and link the plains, and gird the land with their railway trains; they make the desert break forth in bloom, they send a cataract through a flume to turn the wheels of a thousand mills; and bring the coin to a nation's tills; the big men work, and the big men plan, and, helping themselves, help their fellow man. And the cheap men yelp at their carriage wheels, as the small dogs bark at the big dogs' heels. The big men sow while the cheap men sleep, and when they go to their fields to reap, the cheap men cry, "We must have a share of all the grain that they harvest there! These men are pirates who sow and reap and plan and build while we are asleep! We'll legislate till they lose their hair! We'll pass new laws that would strip them bare! We'll tax them right and we'll tax them left till of their plunder they are bereft; we'll show these men that we all despise their skill, their courage and enterprise!" So the small men yap at the big men's heels; the fake reformers with uplift spiels, the four-eyed dreamers with theories fine, which bring them maybe three cents a line, the tin-horn grafters who always yearn to collar coin that their do not earn. And the big men sigh as they go their way—We fear they'll balk at the whole blamed thing some day!—*Walt Mason.*

Amos Whitney

Amos Whitney

THE LIFE OF Amos Whitney, of Hartford, Conn., is so closely interwoven with the history of the firm of Pratt & Whitney, of which he was one of the founders, that it is impossible to give a record of the one without including the other. It is a well-known fact that the making of firearms is one of the oldest arts in the fine machinery line, in fact, the armorer existed before the clockmaker, and there is no doubt that the Pratt & Whitney Company is the oldest teacher in the methods employed in the manufacture of modern firearms.

But the work in this direction was decidedly the smallest part of the improvement and progress the firm has made in the evolution of machinists' small tool business.

The principles involved in this method of manufacture, and the skill and ingenuity displayed laid the foundation for the production of an immense variety of small machine work, such as sewing machines, typewriters, automobiles, etc., while it has played quite as important a part in the manufacture of large machines. It is no exaggeration to say that this has been a most important factor in developing the prosperity of the entire country.

Amos Whitney was born at Biddeford, Maine, October 8, 1832. His parents moved to Lawrence, where he was apprenticed at the age of 14 years to learn the machinist's trade with the Essex Machine Co. Before locating in Lawrence he was educated in the common schools.

His apprenticeship lasted three years, after which he served another year as a journeyman and then accepted a position in Colt's pistol factory in Hartford.

In 1852 Francis A. Pratt came to Hartford and took a position at the Colt factory.

In 1854 Mr. Whitney and Mr. Pratt accepted important positions at the Phoenix Iron Works in Hartford.

The two young men were closely associated, Mr. Pratt as superintendent and Mr. Whitney as contractor.

In 1860 Messrs. Whitney & Pratt rented a room on Potter Street, and this was the commencement of the Pratt & Whitney Company of to-day.

Mr. Whitney next figured in the organization of the Whitney Mfg. Co. of Hartford, one of the most successful firms in that city of industries. Mr. Whitney, honored and respected by machine manufacturers throughout the country, is over 80 years old, is secretary and treasurer of this company. Associated with him is Clarence E. Whitney, president and manager of the company, member of the Administrative Council of the National Metal Trades Association and leading advocate of the Open Shop in Hartford.

Lucian Sharpe

Lucian Sharpe—Who Built up One Great Eastern Industry

LUCIAN SHARPE was born in Providence, March 29, 1830, and lived there all his life, except for a small portion of his childhood. His taste for mechanics led him, on graduating from high school, to become an apprentice with J. R. Brown, who had a small shop in Providence where he did particularly fine work—built tower clocks, made and repaired watches, clocks, surveying and mathematical instruments.

At this time Mr. Sharpe studied the French language in order that he might read the best works on watchmaking, and his familiarity with that language was afterwards of much use to him in building up the foreign business enjoyed by his company.

Two years after the completion of Mr. Sharpe's five-year term of apprenticeship, a partnership was formed between the two men, Mr. Brown recognizing the ability of young Sharpe and offering him at a nominal figure a half interest in the business. The new firm was known as J. R. Brown & Sharpe, and occupied a floor space of 60 x 30 feet, employing only a few men.

In 1858 the firm became the manufacturers of the Wilcox & Gibbs sewing machine, and still retain that contract. It was this perhaps more than any other circumstance that led into tool building. Tools and special machinery found useful in manufacturing sewing machines were first built by them for their own use, and then for others. Mr. Sharpe was associated first with Mr. Brown and later with Mr. Darling, both of whom were very fine mechanics.

One of Mr. Sharpe's strongest points, perhaps, was his faculty of putting responsibility squarely upon the shoulders of those holding the higher positions in the works, and then letting them very much alone, so far as dictation or interference was concerned. He held them responsible for results only, and left to those in whom he had confidence the free choice of means by which that success was attained.

It would be extremely difficult to name a man who has done more than Mr. Sharpe for the advance of the art of manufacturing and for machine tool construction in America.

Since Mr. Sharpe's death, which took place October 17, 1899, at sea, while on his way home from Europe, whither he had gone chiefly on account of his health, the great business that he was one of the founders of and the principal one in building up to its present greatness, has been carried on by his son, Henry D. Sharpe, ably assisted by Richmond and W. A. Viall and others that the elder Sharpe had gathered around him from time to time.

Henry D. Sharpe is a former president of the National Metal Trades Association, and has been for a number of years extremely interested in the various departments of work engaged in by the Association, as well as a staunch defender of its faith.

Samuel E. Hildreth

Samuel Elbridge Hildreth

SAMUEL ELBRIDGE HILDRETH was born in Brattleborough, Vermont, December 8, 1829. His mother was of that family whose most famous representative, Elbridge Gerry, was in public life from 1773 to his death in 1814, and was successively a signer of the Declaration of Independence, governor of Massachusetts and vice-president of the United States.

When the subject of this sketch was two years of age his parents returned to Chesterfield, New Hampshire, where they had formerly resided, and where he remained until the death of his father, three years later. Then an aunt took him to her home in Connecticut, where he remained until he was nearly sixteen years of age. At that period he came to this city, which was his home ever after. In the meantime his mother had married Jonathan Sawyer and had become a resident of Worcester. In this place his first work was in a printing office, but six months of that labor convinced the lad that composing-stick and rule were not to his mind, and he left the art preservative to become a worker in metals.

He learned the machinists' trade with Alexander and Sewall Thayer in the old Court Mills. Afterward he worked for Samuel Flagg till 1854, the date of the burning of the Merrifield buildings, where the shop was located. Then came nearly 20 years' service with the late L. W. Pond, to whom he proved himself a valuable helper. In this business, which grew to be one of the largest in the country, Mr. Hildreth was an important factor, his mechanical ability enabling him to improve upon many appliances then in use, securing patents for improved drills and planes. He became Mr. Pond's foreman and finally his superintendent.

In May, 1873, he began business for himself in buying a third interest in the business of P. Blaisdell & Co., and under this firm name his work continued to the last. His partners at the end were John P. Jones and Enoch Earle, their business the making of machinists' tools, in which line they had few if any superiors.

Mr. Hildreth's entrance upon public life was in 1866, when he represented Ward 3 in the Common Council. The next two years he was an alderman. In 1872 he was sent as representative to the General Court, and in 1882 he was elected mayor of the city as an out-and-out Republican. In his administration he manifested the same practical sense which had characterized the conduct of his own business, and retired from the office with credit and honor. His next public position was as a member of the School Board, to which he was elected from Ward 7 in 1887, and in which he continued until his death. His devotion to all the details of this office was noteworthy. Perhaps no member of the School Board ever gave so much attention to the subject of manual training as did the ex-mayor, and Worcester owes much to him for the establishment of this system.

Joseph Flather

Mr. Hildreth was a member of many organizations, including the order of United American Workmen. His death occurred after a brief illness, June 25, 1893.

Mr. Hildreth married in 1852 Miss Matilda Coleman Howe. Charles Elbridge, his son, continues in the business relations owned by his father, and has for many years been a prominent figure in the National Metal Trades Association, the National Machine Tool Builders Association and many Worcester civic bodies.

Joseph Flather

JOSEPH FLATHER was born in Bradford, England, April 1, 1837. At eleven years of age he started work in the repair shop of a large mill, where he remained for one year. He then served an apprenticeship of seven years with his uncles, manufacturers of woolen machinery.

At the expiration of his term he came to America and found work at the United States Arsenal at Harper's Ferry, West Virginia. In 1859 he went to Nashua, N. H., and entered the employ of a company building sewing machines. At the breaking out of the Civil War he worked in various cities on guns and gun tools.

In 1867 he with others started a business in Nashua to manufacture sewing machines and lathes, but the times were so dissimilar that it was soon dissolved, and the Flather Brothers—Joseph, William J. and Edward —formed a company known as Flather & Co., for the manufacture of lathes. After several changes of location and with varying success, the company built a wooden building on the site of the present shop. This building was destroyed by fire. Late in 1876 the shop was rebuilt of brick, and this section is still a part of the present works.

This company was one of the first to obtain foreign orders for machine tools, the result of exhibiting their product in Philadelphia in 1876. This foreign trade, started at that time, has been a large and profitable part of their business.

One of the specially attractive features of the Flather lathe was the large hollow hand spindles, and another the "patent feed," so-called, patented in 1885.

In 1901 W. J. Flather withdrew, and the company was incorporated as Flather & Co., Inc., with Joseph Flather as president and treasurer, which offices he held until his death.

When the National Machine Tool Builders Association was formed, in 1901, Mr. Flather was honored by being elected as its first president, which office he held for two years.

The business is now successfully conducted by Joseph Flather's son, Herbert L. Flather, for many years a member of this Branch and now on its Executive Board.

Edwin T. Marble

Samuel Winslow—Manufacturer—Street Railway Organizer—Mayor of Worcester

SAMUEL WINSLOW was born in Newton, February 28, 1827. He was a descendant from that family which was prominent in the early history of Plymouth colony. Educated in the common schools, he was in his boyhood employed in the manufacture of cotton machinery, and at the age of 20 he was made foreman of a large shop.

In 1855 he came to Worcester, and with his brother, Seth C. Winslow, started a machine shop in the Merrifield Building on Cypress Street. In 1857 they began to manufacture skates, which industry is still continued. After the death of his brother, in 1871, Mr Winslow carried on the business alone until the formation of the Winslow Skate Manufacturing Company, in 1886, of which corporation he became president and treasurer.

Mr. Winslow was a member of the Common Council, next an alderman, later in the Legislature in 1873-74. In December, 1885, he was elected mayor of Worcester and served four years, with one exception a longer term than any of his predecessors.

Mr. Winslow was early identified with the Mechanics Association, and served it as trustee, vice-president and president. He was a director of the Citizen's National Bank, and president from 1889 until his death He was also a trustee of the People's Savings Bank. During his last years he was interested in organizing and developing the electric railway system of Central Massachusetts. He died October 21, 1894.

Col. Samuel E. Winslow, of the Samuel Winslow Skate Manufacturing Co., Member of Congress from the Worcester District, son of the originator of this industry, is president and treasurer of the company.

Edwin T. Marble—Splendid Type of Worcester Mechanic

BORN IN THE neighboring town of Sutton, in 1827, Hon. E. T. Marble, was until his death, July 3, 1910, president and treasurer of the Curtis & Marble Machine Company. He was an active participant in the oversight of a business which is regarded as one of the most staple in Worcester.

Mr. Marble began his work as a machinist nearly 70 years ago. It was in the year 1845 that he began apprenticeship with Albert Curtis. He was then 18 years of age. There were four of them who boarded together; one was from Charlton; another from Athol, and a third from Pomfret, Connecticut. All of them, like himself, were from native American stock.

The first year of his apprenticeship he earned $50.00 and his board, which would probably not content many young men 18 years old to-day. The next year he had $75.00 and the third year $125.00. On August 18, 1848, he began as a journeyman mechanic, and received $1.50 per day.

He continued with Mr. Curtis only two months after his apprenticeship was over, and then engaged with the firm of A. & S. Thayer, afterwards Thayer, Houghton & Co., makers of machine tools on Union Street. In 1850 he went to Shelburne Falls and worked on cutlery for a year or two, but soon came back to Worcester and to the shop of the Thayers. In 1859 he became superintendent of the E. C. Cleveland & Co. Machine Works, on Central Street, and four years later was a partner with Mr. Curtis, and took full charge of the machine business, in which he was associated with him for over 30 years. The Curtis & Marble Machine Co. is now carried on by his four sons: E. H., W. C., A. C. and Charles F. Marble.

Mr. Marble was 82 years old when he died.

Blake Pump and Condenser Company

ONE of the enterprising firms of Fitchburg is the Blake Pump and Condenser Co., which has recently secured patents on a new type of high duty condensing apparatus that is proving alike efficient and economical. It consists of twin vertical cylinders so designed as to combine in one machine a water circulating pump, air and vapor pump, and a jet condenser. To obtain high duty with jet condensers, it has been common practice to connect a separate air and vapor pump to the condenser, aside from the water circulating pump, resulting in a more or less cumbersome apparatus, the initial and maintenance costs of which are very heavy.

Being vertical in construction, this apparatus reduces friction to the minimum and the power required to operate is consequently extremely small. Both sides are perfectly balanced on a walking beam so that the weight of pistons, etc., does not in any way affect the power required, this being dependent entirely upon the duty performed. The construction is extremely high grade throughout. Tests upon installations now in operation show exceptionally high efficiency, very low maintenance expense and a very small amount of power used to operate. This apparatus, like most other valuable inventions, is the result of years of experimenting, the objective point being of course to produce a machine having a combination of maximum simplicity, durability, efficiency and economy.

It is stated on authority that this combination has the distinction of being the only combined high vacuum twin vertical air pump and jet condenser on the market at the present time.

The officers of the Company are: President, W. H. Dolan; Treasurer, H. E. Jennison; Secretary, R. C. Witmer.

Draper Company

STRANGE as it may seem, to tell of the early days of the Draper Company it will be necessary to go back to 1842 when the Hopedale Community, a religious organization, was formed in what is now Hopedale and then a part of Milford. The people interested began practical operations about April 1, 1842, "with a joint stock capital of less than $4,000 on a worn out farm of 258 acres, in a single, time-shattered mansion nearly 120 years old with a few rickety out-buildings."

Ebenezer D. Draper (born 1813) was one of the main pillars of the institution until its decadence. The community seemed to flourish for about 14 years increasing to about 100 members and 300 inhabitants living in 50 houses, owning 511 acres "with a respectable array of homely but serviceable mills, shop and conveniences with not an idler or spendthrift among them." Yet in a short time the financial reports of the community convinced Mr. Draper and his brother George, who together owned three-quarters of the stock, that the community was impractical, and the business of the community passed into private hands.

The business interests were taken over by Ebenezer D. and George Draper and formed the cornerstone of the great industrial structure they and their successors have erected in Hopedale.

They paid all the debts and bought in outstanding stock at par. At least some of the credit for this model manufacturing town is due to the community of which the two Drapers were the two most prominent laymen.

It may be interesting to know how the name of the town was obtained. The old farm first secured had always been known as Dale and the community added the name of Hope, making the name Hopedale. The names Draper and Hopedale have become synonymous. The place became an incorporated town April 7, 1886, named by Rev. Adin Ballou, who started the community.

Gen. W. F. Draper, George A. Draper, Hon. Eben S. Draper, and others bear the same honorable name that has been noted in war, politics and philanthropy, but while being noted in all these they, by their great mechanical genius and business capacity, have built this wonderful industry until to-day about 2,500 hands are employed in some of the most model buildings and under the best conditions obtainable anywhere.

Hopedale has been justly named a "spotless town," containing a happy, prosperous people, and a town attractive in every way.

The present officers of the company are: President, Frank J. Dutcher; Vice-President and Purchasing Agent, E. D. Bancroft; Treasurer, George A. Draper; Agent, Eben S. Draper; Assistant Agent, W. I. Stimpson; Southern Agent, J. D. Cloudman.

Whitin Machine Works

PERHAPS two of the most noted examples of the early struggles that nearly all of Worcester County industries had to go through to get their business established, can be shown in the history of the Whitin Machine Works at Whitinsville and the Draper Company at Hopedale.

John Crane Whitin was born March 1, 1807. After he was nine years old, when not in school, he worked in the picker room of his father's mill. At 12 years of age he was placed in the repair room of the mill and worked there three years. In 1825 he, with his brother and father, formed the firm of P. Whitin & Sons to manufacture cotton goods.

John C. naturally took care of the mechanical end of the business, and remembering the difficulties he had in the picker room, he decided to design and construct a new picking machine. In 1850 he directed his effort to its improvements. With two lathes, not worth more than $15 each, and with an occasional job done in a neighboring shop he, with two assistants, completed the first picker in about one year. This machine was such a great improvement over those then in use and the demand for them was so great, that Mr. Whitin was encouraged to build other machines in the same line. This humble beginning was the starting of the now famous Whitin Machine Works incorporated in 1870 with John Crane Whitin as treasurer. When busy the firm employs 2,500 to 3,000 hands and melts in the foundry from 100 to 120 tons daily.

At the head of the Company are the following:—President, C. W. Lasell; Treasurer and General Manager, G. Marston Whitin; Purchasing Agent, George B. Hamblin; Superintendent, A. H. Whipple.

How to Play the Game of Life

Some men are creators. They know what to do at the spur of the moment. Their keen eyes see through things, and they bring all their forces into play in the game of life. They are well balanced, tactful, quiet, concentrated, punctual, persevering, determined. Endowed with superb mental poise and calm judgment, they grasp and execute new combinations. The trackless forest recedes where they advance. Great commercial enterprises, the ushering in of a new epoch in the world's industrial workshop invariably originate in the brains of such. Pioneer minds! A sound body and clear head is the secret.—*Brains.*

Worcester's Motive Power

WORCESTER manufacturers rely on four great agencies for motive power: water, steam, gas and electricity, and the greatest of these is electricity.

Time was when the manufacturer would not think of locating anywhere except on a river or stream which could be utilized to turn the wheels of his factory, and many communities to-day owe their foundation to the fact that they were supplied by an abundant water power and thus great centres of industry were established.

About a score of years ago science came to the rescue and developed electricity energy, transmitting it to nearby towns and cities from the water powers, until to-day the use of hydro-electric power is transmitted as far as 100 miles at tremendous high voltage, and used in places where 20 years ago people never dreamed of being able to use power from the water which they had seen tumbling over rocks many miles from their shops and factories.

The result is that the Connecticut River Transmission Company and its subsidiary companies have performed great service and expended a fortune in securing for present and future generations in Central Massachusetts the use of the immense water powers concentrating in the beautiful Connecticut River and the turbulent streams of the Deerfield. Thus it is that to-day much of this harnessed power is being used by manufacturers in Worcester County.

In addition to this agency, Worcester County manufacturers, in former years as well as to-day, have relied on the Worcester Electric Light Company, the Worcester Gas Light Company, and to our own engine builders for the power to turn out their vast products.

Concord Bridge

By the rude bridge that arched the flood,
Their flag to April's breeze unfurled,
Here once the embattled farmers stood
And fired the shot heard round the World.

Ralph Waldo Emerson.

The Bigelow Monument

THE BIGELOW MONUMENT, standing on Worcester's Common, was erected at the expense and at the suggestion of Colonel T. Bigelow Lawrence, of Boston, a great-grandson of Col. Bigelow, and was dedicated on the 86th anniversary of the Battles of Concord and Lexington, or the 19th of April, 1861. Later, special note was made of the fact that while the peaceful ceremonies were in progress on the beautiful centrepiece of the Heart of the Commonwealth, a later generation of Worcester patriots were encountering National foes in the streets of Baltimore.

Perhaps no public occasion in the whole history of the town and city had drawn together so large a gathering as that which hailed the dedication of this piece of white marble. Naturally the descendants of the Revolutionary Soldier were present in great numbers. A song, written for the occasion, by Clark Jillson, was sung by a glee club; the speaking was by the generous donor, Colonel Lawrence; the Mayor of the City, Hon. Isaac Davis, ex-Governor Levi Lincoln, several members of the Bigelow family and Judge Benj. F. Thomas, a grandson of Isaiah Thomas, the contemporary and political friend of him whom the monument commemorates.

The remains of the Colonel, originally buried within what was used as the inclosure of the monument, were exhumed and inclosed in a metallic casket, and reburied beneath the monument itself. The monument was designed by George Snell, of Boston; the granite parts were executed by a Quincy company and the marble was imported from Tuscany.

Shrewsbury Minute Men

A BRONZE TABLET, placed by the Shrewsbury Historical Society, on a boulder in Park Square, Shrewsbury, which is situated a few miles from Worcester, records the valor of the men who fought during Revolutionary days, and who belonged to that town, the home of the great leader of the Revolutionary Army—Gen. Artemus Ward.

The boulder weighs four tons, and the inscription states that 128 Minutemen from Shrewsbury responded to the Lexington alarm, April 19, 1775. These 128 men came from a town with a population at that time of 1,600, and from a district extending to 40 square miles, the people of which were busily engaged in the rush of spring work, plowing, harrowing, and sowing on their farms.

Worcester in its Early Days

Pen and Ink Sketches of Some Men and Women Who Made the City Famous

John Adams

Second President of the United States

JOHN ADAMS, who followed George Washington in the presidency of the United States, taught school in Worcester, 160 years ago, in a little schoolhouse which stood on Courthouse Hill. The site of the school is now marked by a bronze tablet placed there by the Daughters of the American Revolution, Timothy Bigelow Chapter.

John Adams, the second president of the United States, occupies an exceedingly interesting place in the history of the country He is the only president who has had the distinction and honor of living to see his son, John Quincy Adams, also elected to the chief magistracy of this great nation.

The town of Braintree, in a portion of it now connected with Quincy, claims the honor of the birthplace of John Adams, October 30, 1735. At 14 years of age, in response to his father, he said he wanted to be a farmer. He worked one very hot day at hoeing in the fields and at night he came home and said: "Father, I have been thinking to-day and have concluded that I should like to try my books." And so two years later, at 16, he entered Harvard and graduated in 1755.

To help Adams go through Harvard his father worked also at shoemaking as well as farming, so that the young man might be equipped for the work he later had to perform as president of the United States. When he left Harvard, he looked round him for something to do, and was fortunate in securing a position in Worcester as a teacher in one of the public schools. While teaching school, he also studied law.

The North American continent was going through the struggle as to whether or not English or French influences were to be the dominating power. Adams wrote a letter at that time to a friend in which he spoke almost in prophetic words of the future greatness of this country, all of which has been fulfilled.

He debated in his own mind while teaching whether he would give himself to law, to politics or to the army. For two years he remained in Worcester, then a town of only a few hundred people, finally giving up the school to return to Braintree where he took up the study of law.

Bunker Hill
Watching the Battle

John Adams was one of five delegates sent from Massachusetts to the Continental Congress and played a prominent part in overthrowing the rule of King George. He seconded the motion of Richard Henry Lee, of Virginia, June 7, 1776, "that these United States are, and of right ought to be, free and independent." Jefferson and Adams were appointed by a committee of five to draw up the Declaration of Independence, and at Adams's request Jefferson drafted that immortal document.

March 14, 1797, at Philadelphia, John Adams was inaugurated President of the United States, and though not regarded as a popular president in that sense of the term, he was a good president under exceedingly trying circumstances.

John Quincy Adams, his son, was inaugurated president in 1825 and honorably upheld the reputation of his father.

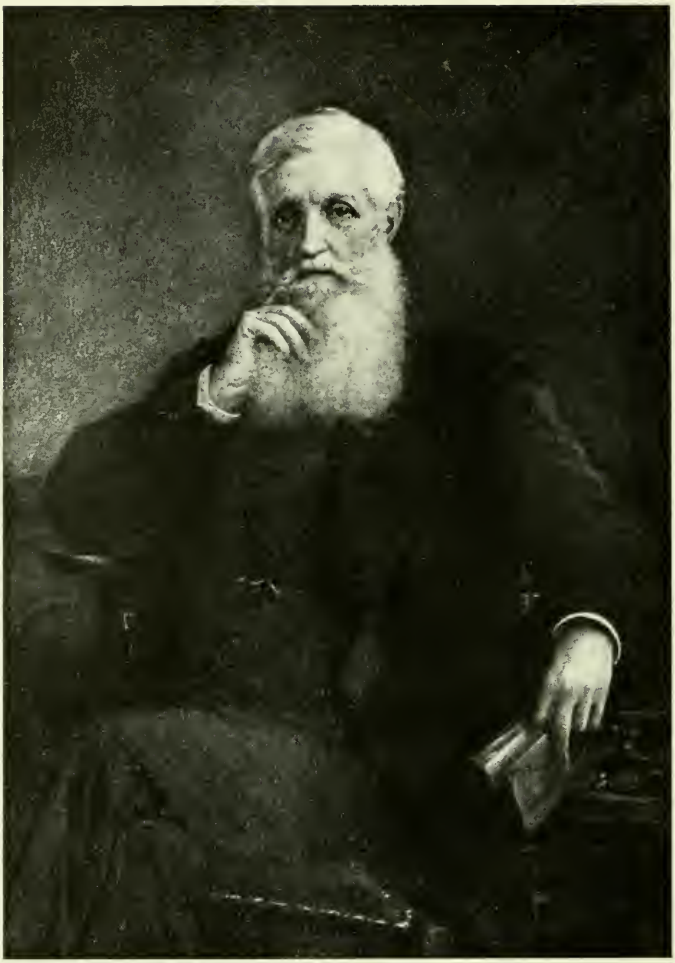
Col. Timothy Bigelow—Worcester's Leader of the Minute Men

TIMOTHY BIGELOW, the third in descent from John Bigelow, one of the early settlers of Watertown, was born in the town of Worcester, August 12, 1739, the old home being on what is known as Pakachoag Hill. Early apprenticed to the blacksmith's trade, he became one of the most energetic and prosperous of the citizens of his native town. Having scholarly tastes, he became well read in the best books to be had in Worcester and was early conspicuous for his devotion to the cause of the people in the gathering storm of the Revolution, while the wealthier portion of the populace were British or Tory in their leanings. In March, 1773, he was a member of the Committee of Correspondence, and later he organized the "Political Society." Owing to his efforts in the great town meeting of 1774 the then treasonable resolutions were adopted, and thereafter the "Sons of Liberty" ruled triumphant where Toryism had prevailed before.

He became an associate of Warren, Otis and other leaders of the patriot cause and during the first and second sessions of the Provincial Congress he was a delegate from Worcester, and to the command of the town's minute-men he was elected by a unanimous vote. His company was so well drilled that at a parade in Cambridge many months later, General Washington said, "This is discipline indeed."

Having formed back of the Old South Church, on the Worcester Common, in the afternoon of the 19th of April, 1775, he led his company to Cambridge, arriving the next day, reporting immediately for service, and soon after receiving from Congress the rank of major.

He was with Arnold in the exacting expedition against Quebec. On this trip, under orders, he ascended a high prominence for purposes of observation near the headwaters of the Kennebec, and, being claimed as the first man to make such a trip, the elevation has since been known as Mt. Bigelow.



George Bancroft

On the 31st of December, 1775, in the assault on the city he was captured and was held until the following August. As soon as an exchange could be effected he returned to the service as a lieutenant-colonel.

At Saratoga, Valley Forge, West Point and other places, to the very end of the strife, Colonel Bigelow and his Fifteenth Regiment gave a good account of themselves. After eight years of service, with impaired health and an empty purse, he came back to his home to find his business ruined, and though he worked hard to repair his ruined fortunes his efforts were futile and, to the everlasting shame of his native town, he was thrown into a debtor's prison, where he died, March 31, 1790. Over six feet in height he was in every way a magnificent specimen of American manhood.

The Colonel Timothy Bigelow mansion stood at the corner of Main Street and Lincoln Square opposite the Court House, from 1749 to 1830. Hon. Stephen Salisbury bought the estate in 1824. The old structure was removed to Prospect Street, facing the jail grounds, and the present brick block built on its site. A tablet marks the building as "The site of the mansion of Timothy Bigelow, Leader of the Minute Men from Worcester, April 19, 1775, Colonel of the Fifteenth Massachusetts Regiment."

George Bancroft—Historian of America

GEORGE BANCROFT, the historian of the United States, is a son of Worcester. A rough-hewn block of granite a short distance from the Worcester Polytechnic Institute on Salisbury Street marks the spot on which the house in which he was born stood, and Bancroft Tower, erected in his memory, stands on one corner of the farm.

Aaron Bancroft, the father, was a minister, and in Scotland George would be called "a son of the manse."

George was the eighth of 13 children, born October 3, 1800, the son of Aaron and Lucretia (Chandler) Bancroft; Lucretia was one of 17 children of a distinguished Tory Royalist, John Chandler, whose goods and lands were confiscated.

Aaron preached in the pulpit of the Old South Church, the first parish, where the majority of the people were conservative and held tenaciously to the orthodox side of Calvinism. A score of old families of intellect and culture showed a tendency towards Arminianism. Aaron Bancroft preached his views without fear or favor, and the orthodox majority thought his views heretical. Then there was a split in the church and in 1785 the advanced thinkers asked him to become their minister in another place.

For fifty-three and a half years Aaron Bancroft stood his ground, preaching the truth as he saw it in this new church, which grew to be a Unitarian communion, and the second edifice now stands on Court Hill.

He shouldered a musket with other young compatriots and fought the British at Lexington and Bunker Hill.

In the year 1813 George entered Harvard at the age of 13. He graduated at 17 with the second English oration Granted a scholarship of

George Bancroft, House where he was born, and Bancroft Tower

$700 a year and, sent by the college he had been such an honor to, he departed for Germany, June 27, 1818. From Goething he went to Berlin and in the intervals of vacation he spent a few weeks in Heidelberg, in Paris and the Alps. For a time he intended to be a minister.

Upon returning to the United States, Bancroft became a tutor at Harvard. He still tried to become a minister but no church opened to him. He tried to start a boys' school, but that also was a failure. He next published a volume of poems which fell flat. He wrote text-books for schools, translated "The Politics of Ancient Greece," followed this with a translation of Heeren's history of "The Political System of Europe." He wrote 17 articles for the North American Review, one on "The Bank of the United States."

This blazed the way for his history writing, and young Bancroft at last found himself.

He was defeated as Democratic candidate for governor of Massachusetts in 1844, but still remained intensely interested in the presidential contest between Whig and Democrat. Polk being elected, George Bancroft was appointed Secretary of the Navy. He was later appointed ambassador to England and while there he found his own books of history as popular in London as in Boston. A host of men of letters made the embassy a meeting place, among them Thomas Carlyle, Milman, Macaulay, Thackery, Dickens and Hallam. He increased England's estimate of America and secured great international improvements in postal laws.

Bancroft chose Washington as a place of residence at the close of Grant's administration, where he spent the long afternoon of his life in a large double mansion.

January 17, 1891, almost completing a century, this wonderful cycle of life ended.

General Artemas Ward—of Revolutionary Fame

GENERAL ARTEMAS WARD was the first commander-in-chief of the American Revolution, also the victor of the evacuation of Boston and the hero of Shay's Rebellion, and in the town of Shrewsbury, six miles from Worcester, stands the old home, one of the most revered landmarks of the county.

General Ward was born in the old farm house which was then adjacent to the present Colonial homestead, November 7, 1727. He graduated from Harvard University in 1748.

In an ancient trunk a favored few are shown letters which recount the earliest chapters of the American Revolution, while the tall clock which told off the hours to Artemas Ward as a boy still ticks the hours, the years and the generations away.

In the old trunk are writings whose broken seals disclose the first secrets of the conflict in the handwriting of the fathers of the Revolution,

Artemus Ward

George Washington and his generals, in the handwriting of the creators of the Constitution, the story of the secret formation of the Minute-men, of the appropriation of powder stores by the patriots from the King's powder houses.

New England was dear to him chiefly as the mother of the nation and the mother of the Revolution. He died, October 28, 1800.

George Frisbie Hoar—Citizen of Worcester for Half a Century

OPTIMISM was the watchword of George Frisbie Hoar's life, and during the many years that he served the people he tried to imbue them with that spirit. He had no patience with the grouchy ones who could only see that anarchism and socialism were sending the country to the eternal bow-wows.

"The anarchist must slay 75,000,000 Americans before he can slay the Republic," he once said to one of these chronic pessimists.

Senator Hoar held more offices and was offered others that he did not accept, than any other Worcester man. When he was 25 years old he was for one year in the Massachusetts House of Representatives, another year when he was 30, he served in the Massachusetts Senate. The pay was two dollars a day at that time. He twice refused the nomination for Mayor of Worcester and twice refused a seat on the Supreme Bench of Massachuetts. For years he refused a nomination to Congress.

After a breakdown from overwork he went to Europe for his health, and during his absence arrangements were made for his nomination to Congress. These had gone so far that he could not escape "The result is," he said himelf, "I have been here 20 years as representative and senator, the whole time getting poorer year by year. If you think I have not made a good one you have my full authority for saying anywhere that I entirely agree with you."

The branches of the family tree from which George Frisbie Hoar sprang, in Concord, August 29, 1826, have sheltered many of the greatest movements in the history of the country. Its roots started with the country's history.

He entered Harvard when 16 years old, in 1842, after preparation at Concord. He confessed that he looked back upon his graduation as the four wasted years with a good deal of chagrin. His time was largely wasted in novel reading, books which had not much to do with his college studies, and in lounging about his rooms and in those of his fellow students. He tells of a remark made by old Dr. Bartlett, of Concord, that Samuel Hoar's boys used to be the three biggest rascals in Concord.

But the mischievous lad and student loafer came to himself, underwent a great reaction, as witness this counter confession, "When I graduated I looked back on my four wasted years with chagrin and remorse. I think that I can fairly say that I have had few idle moments since. I

Home of Artemus Ward

have probably put as much hard work into life as most men on this continent, certainly I have put into it all my work that my physical powers, especially my eyes, would permit. I studied law in Concord the first year after graduation. I used to get up at 6 o'clock every morning, go to the office, make a fire and read law until breakfast. Then I went home to breakfast and got back in about three-quarters of an hour and spent the forenoon until one reading law. After dinner, at two o'clock, I read history until four. I spent two hours in walking alone in the woods and roads. At seven I read geometry and algebra, reviewing the slender mathematics I learned at college, and then spent two hours reading Greek. I have no remorse for wasted hours during those two years at Concord."

Here is his declaration of statesmanship, "It is by your free choice that this nomination has been conferred. It has not been begged for or bargained for or intrigued for or crawled into. I never lifted my finger or spoke a word to any man to secure or to promote my own election to any office."

Judge Emory Washburn received young Hoar into partnership for practice in Worcester County and he succeeded him, owing to the election of Judge Washburn as Governor. From 1849 to 1869, so great grew the professional service that at one time or other Hoar became counsel for every one of the 52 towns in Worcester County.

Hoar opposed the A. P. A. movement and supported the abolition of slavery, and he fought fiercely against the refusal of the Southern people to secure the negro the ballot. His most outstanding contest was against the corruption of the Republican party itself. "When I entered Congress in 1869," he confessed, "the corridors of the capitol and the committee rooms were crowded with lobbyists. My own public life has been a brief and insignificant one, extending little beyond the duration of a single senatorial term, but in that brief period I have seen five judges of a high court of the United States driven from office by threats of impreachment for corruption or mal-administration."

These were sources of shame to patriotic congressmen until the issue was met and punishment meted out, a rectification in which Hoar was a leader.

Such was the state of affairs even during Grant's administration, but his good-natured trust blinded him to the crimes of the corruptionists. The Tweed ring and the New York gang of grafters were bad enough, but Hoar's hands were full with the Massachusetts evil He saw that Massachusetts indeed furnished the leaders in a school of national corruption within the Republican party which with dismay he hastened to expose. That led to the installation of the civil service law to take 100,000 offices out of the system of public patronage and senatorial dictation, and in this Hoar was also one of the leaders.

Senator Hoar was a lover of his home, and of nature. As a champion of the feathered race he carried an enactment through Congress for their preservation. His former home, on Oak Avenue, is a museum of many rare pieces of furniture picked up at home and abroad.

Main Entrance and Kitchen of
General Artemus Ward House in Shrewsbury

Senator Hoar died in Worcester, September 30, 1904. The funeral services, attended by a distinguished congregation of mourners of national fame, took place in the Church of the Unity, October 3, 1904.

An admiring populace in Worcester, the city he loved, honored itself and the memory of one of its most notable citizens, by erecting a statue of Senator Hoar on the northerly side of the City Hall, and it was dedicated with appropriate exercises June 26, 1908. A committee was appointed to have charge of the work, of which the then Mayor, Walter H. Blodget, was chairman, ex-mayor Philip J. O'Connell secretary; Charles M. Thayer treasurer and John B. Bowker, auditor.

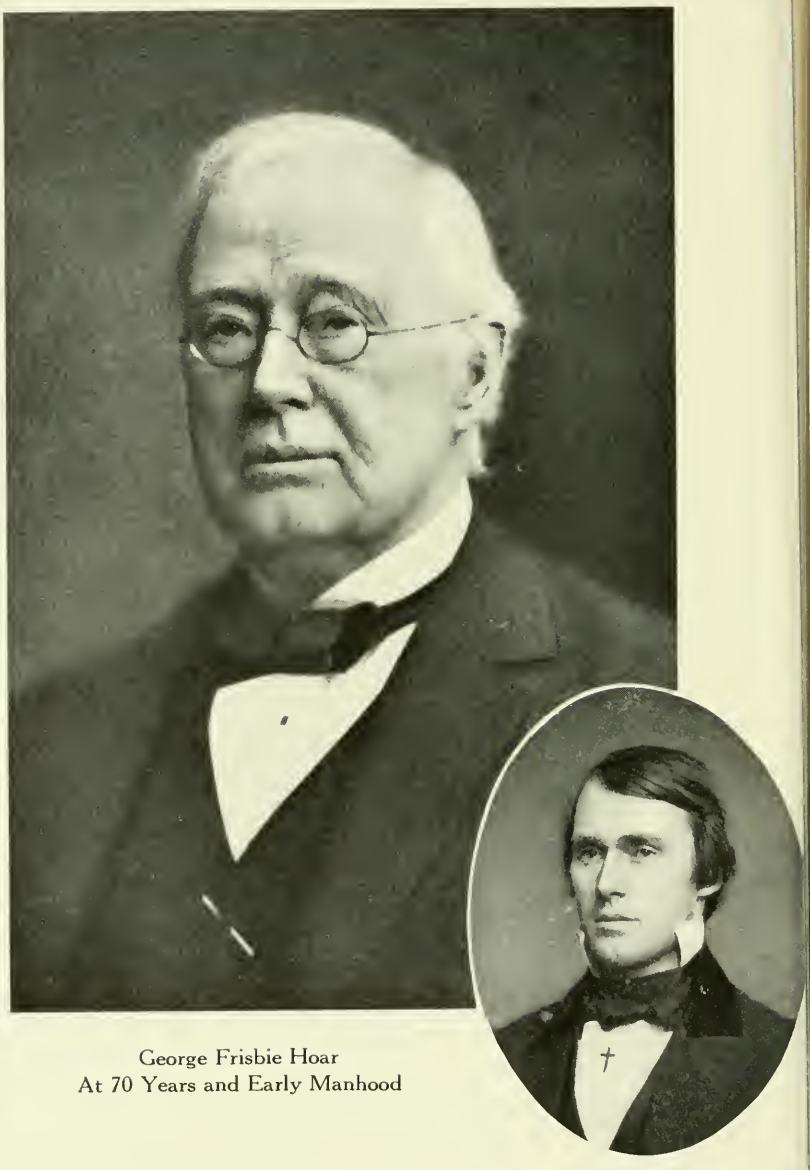
The monument was erected by public subscription, there being more than 30,000 subscribers, and in a few weeks' time over $21,000 was received by Treasurer Thayer. Daniel C. French was chosen as sculptor of the statue and Peabody & Stearns were selected to design the pedestal, which was furnished by Norcross Brothers.

June 26, 1908, the statue was dedicated in presence of a large concourse of people, the oration being delivered by Hon. William H. Moody, Justice of the Supreme Court of the United States. Addresses were also given by Gen. Curtis Guild, Jr., then Governor of Massachusetts, Hon. James Logan, while Dr. Edward Everett Hale offered the prayer.

These Inscriptions are on the Pedestal of the Statue

West Side

GEORGE FRISBIE HOAR
BORN IN CONCORD AUGUST 29 1826
DIED IN WORCESTER SEPTEMBER 30 1904
LAWYER SCHOLAR ORATOR STATESMAN
CITIZEN OF WORCESTER
FOR MORE THAN HALF A CENTURY
MEMBER OF MASSACHUSETTS HOUSE OF
REPRESENTATIVES 1852
MEMBER OF MASSACHUSETTS SENATE 1857
CITY SOLICITOR OF WORCESTER 1860
MEMBER OF THE UNITED STATES HOUSE OF
REPRESENTATIVES 1869-1877
SENATOR OF THE UNITED STATES 1877-1904



George Frisbie Hoar
At 70 Years and Early Manhood

North Side

PURITAN AND PATRIOT BY INHERITANCE
UNSULLIED IN CHARACTER
LOVER OF LIBERTY
CHAMPION OF THE OPPRESSED
HIS LIFE EMBODIED THE TRADITIONS OF
MASSACHUSETTS
AND OF THE FOUNDERS OF THE REPUBLIC
HIS HIGH IDEALS ZEAL FOR LEARNING AND
CONSTRUCTIVE STATESMANSHIP
MADE IMPERISHABLE CONTRIBUTIONS
TO A GREAT PERIOD OF AMERICAN HISTORY
THIS STATUE IS RAISED
BY GIFTS FROM THIRTY THOUSAND OF HIS
TOWNSFOLK
THAT THE PEOPLE FOR ALL TIME MAY BE
INSPIRED BY THE MEMORY
OF HIS PERSONAL VIRTUE AND PUBLIC SERVICE

South Side

"I BELIEVE IN GOD, THE LIVING GOD, IN THE AMERICAN PEOPLE, A FREE AND BRAVE PEOPLE, WHO DO NOT BOW THE NECK OR BEND THE KNEE TO ANY OTHER, AND WHO DESIRE NO OTHER TO BOW THE NECK OR BEND THE KNEE TO THEM.

"I BELIEVE THAT LIBERTY, GOOD GOVERNMENT, FREE INSTITUTIONS, CANNOT BE GIVEN BY ANY ONE PEOPLE TO ANY OTHER, BUT MUST BE WROUGHT OUT FOR EACH BY ITSELF, SLOWLY, PAINFULLY, IN THE PROCESS OF YEARS OR CENTURIES, AS THE OAK ADDS RING TO RING, I BELIEVE THAT, WHATEVER CLOUDS MAY DARKEN THE HORIZON, THE WORLD IS GROWING BETTER, THAT TO-DAY IS BETTER THAN YESTERDAY, AND TO-MORROW WILL BE BETTER THAN TO-DAY."

Eli Whitney

Eli Whitney—Mechanic and Cotton Gin Inventor

ALTHOUGH the name of Eli Whitney is chiefly associated with the invention of the cotton gin he invented many other things. Between the ages of 13 and 16 he had first made the machinery for making nails and then the nails themselves.

He had refused his father's offer to send him to a preparatory school and later to college, but the manufacture of nails opened a way for him to go to Yale.

He was 18, and his hard life had shown him the desirability of a college education. His father objected, declaring he was too old; his stepmother objecting because of the expense. Unlettered mechanics declared that one good mechanic was spoiled when he went to college.

Eli Whitney was born in Westboro, December 8, 1765. His mother died soon after his birth. He began to develop his inventive genius by working in his father's little lean-to workshop.

An invitation to Mulberry Grove, by the widow of Gen. Nathaniel Greene, brought about the invention of the cotton gin. At that time it took a negro a day to clean a single pound of raw cotton and separate it from the seed. At that time Eli had never seen raw cotton or cotton seed. Within ten days after his first conception of his plan he made a small though imperfect model. Observing old negro mammies clawing off the seed with their finger nails gave the youthful genius his ideas for a machine.

Eli Whitney will always be associated with the invention of the cotton gin.

Elihu Burritt—The Learned Blacksmith

WELL KNOWN in the latter years of his life as the "Learned Blacksmith," Elihu Burritt made his home in Worcester, back in the forties, and published two periodicals there, one a monthly, "The Literary Geminae," in 1841, and a weekly, "The Christian Citizen," 1844-1851. He was born in New Britain, Conn., December 8, 1810.

At the death of his father, in 1828, he apprenticed himself to a blacksmith in that town and followed that occupation for several years.

While learning this trade he decided to be a surveyor, and took up the study of mathematics, for which he had a natural taste. It is said that he was in the habit of practicing on problems of mental arithmetic, which he extemporized and solved while blowing the bellows. They were rather quaint in their terms but quite effective as an exercise. One was: "How many yards of cloth three feet in width, cut into strips an inch wide, and allowing half an inch at each end for the lap, would it require to reach from the centre of the earth, and how much would it all cost at a shilling a yard?" This was a mental example. He would not allow himself to make a single figure with chalk or charcoal in working out this problem. At the end of his day's work he would carry home in his head the whole example

Elias Howe

to his brother, who was a school teacher, and he and his assistant, with their slates, would prove each calculation and find the result to be correct.

When he decided to take up to a greater extent the study of the languages and looking about for the location giving him the opportunities in this line, he decided to locate in Boston, and walked from New Britain to Boston. Not finding what he sought in Boston he turned his steps to Worcester, where he not only obtained ready employment at the anvil but also access to the large and rare library of the Antiquarian Society, containing a great variety of books in different languages. When the work at the anvil became slack, or by working overtime at night, he was able to give more time at the library in the study of the languages.

In a letter to Wm. Lincoln, he said: "I carried my Greek Grammar in my hat and often found a moment when I was heating some large iron when I could place my book open before me against the chimney of my forge and go through my study unperceived by my fellow workman, but sometimes with a detrimental effect to the charge in the fire."

After leaving Worcester he traveled extensively in this country and Europe, and in his later years was one of the best known, most respected and loved men of his time He finally returned to his native town of New Britain and died there March 6, 1879, the most wonderful man in many respects this country has ever produced.

Elias Howe—Spencer's Most Famous Son

ELIAS HOWE may be called one of the emancipators of womankind, for long before votes for women were heard of, this Spencer boy invented the sewing machine. He was considered a happy-go-lucky fellow up to the time he was 20 years old.

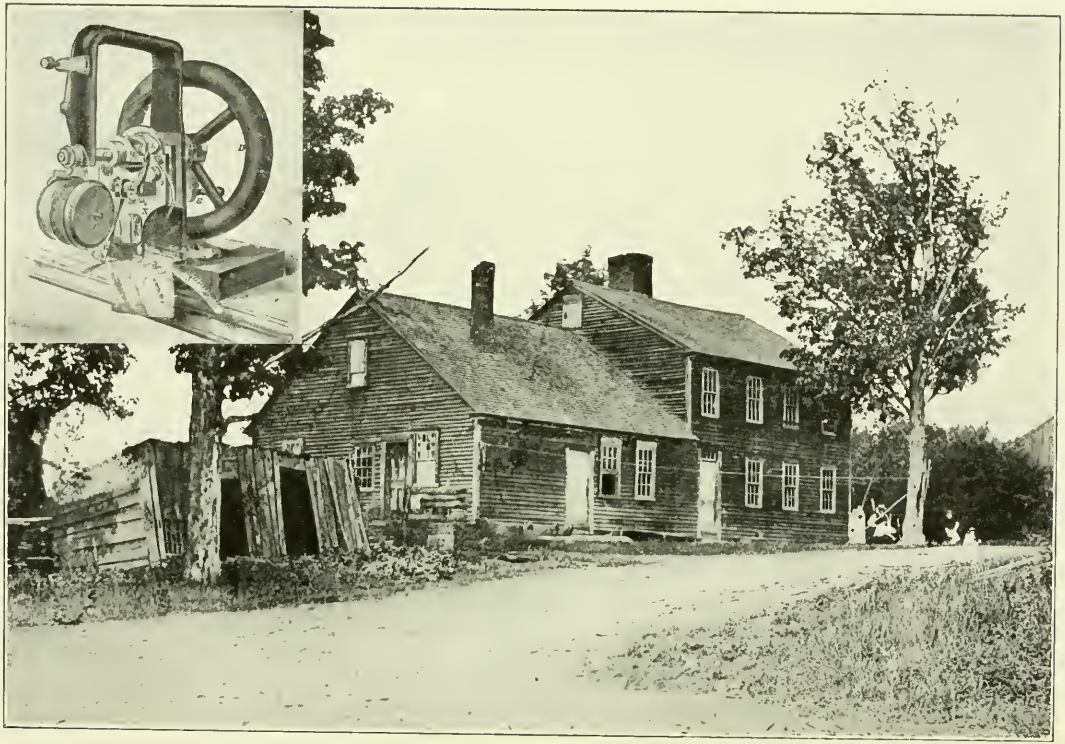
At that time, while he lounged in a Boston store, a chance remark dropped by Ari Davis, the owner of the store, to an itinerary tinker who had in view the inventing of a knitting machine, took his hands from his pockets and set them at work.

Inventive genius was a family trait, however, for an uncle, William Howe, was the designer of the first truss bridge erected in America, that over the Connecticut River at Springfield. Tyler Howe, another uncle, was the inventor of the spring bed.

Elias Howe was born July 9, 1819, in Spencer, into the family of a farmer and miller. He was one of eight children and at first was partially crippled.

Observation of his father's mill wheels as a boy, of machinery in the Lowell shops at 16, later in a Cambridge machine shop gave impetus to his inventive genius. It was in the shop of Ari Davis, a maker of mathematical instruments, that Elias heard the remark that stirred his genius.

At 21 he was married, with his family increasing while he began to decline into semi-invalidism with long days of work. His wife took in sewing and he watched her get thinner daily with incessant toil.



Birthplace of Elias Howe in Spencer and
Model of First Sewing Machine

Gradually the ideas evolved until a crude model of a machine of wood and wire made a finished stitch — 300 stitches a minute.

The usual accompaniment of genius — poverty — hampered him.

George Fisher, a schoolmate, aided him financially, but the machine could not be launched in America. He sent his brother to England with it to a man named Thomas, a maker of corsets and carpet bags.

The machine was patented in England and Thomas agreed verbally to pay three pounds on every machine sold. Thomas broke his side of the bargain, notwithstanding that he got ten pounds himself and made over $1,000,000. He sent for Elias Howe to adapt his machines to corsets and after that he was discharged.

Imitations were appearing and a patent suit against S. M. Singer was decided in his favor, all contests were settled and all royalties were his. Complete victory came all at once.

Not only did Elias Howe bring fame to his native town and was hailed as the liberator of womankind by eliminating the drudgery of sewing, but his two uncles, born in the same house, were inventors of no small genius. The people of Spencer felt that such a trio belonging to one family, bringing lasting fame to their town, should not go unrecognized and on January 16, 1907, the Howe Memorial Association was incorporated. On the 19th of May, 1910, a splendid statue of granite and bronze, in memory of the three inventors, was unveiled with elaborate services

Hon. Alfred S. Roe, of Worcester, delivered the dedicatory address which was a valuable contribution to the historic data of Worcester County. Hon. Charles N. Prouty was then and still is the president of the Howe Memorial Association.

Besides the monument of granite and bronze to be seen in the town of Spencer, the traveller on the Boston & Albany Railroad may see on a high promontory near the North Spencer station, a wooden tablet on a pole with the information that the house in which Elias Howe was born was located in the town of Spencer.

Dr. William Morton—Charlton's Distinguished Son

"WE HAVE conquered pain," read the headlines in the newspapers all over America on the 16th day of October, 1846, and the significant words were echoed all over the world. The day previous, the surgical amphitheatre of the Massachusetts General Hospital witnessed the first surgical operation rendered painless by the use of ether.

Dr. William Thomas G. Morton, the discoverer of the first successful anæsthetic was born in the hill town of Charlton, a dozen miles from Worcester. It was a strange coincidence that William Morton's grandfather served during the American Revolution, under the martyr of Bunker Hill (President Joseph Warren), whose nephew, Dr. John C. Warren, a

Dr. William Morton, Conqueror of Pain

distinguished Boston surgeon, was the man to perform the first operation with the aid of ether.

Up to 10.15 o'clock October 16. 1846, the conquest of pain remained an unsolved mystery. The hour set for the young dentist to make good his claim of the discovery was 10 o'clock, and as doctors and students waited for his arrival, Dr. Warren, "presumed he was otherwise engaged" and took up the scalpel to begin. A laugh with a touch of sarcasm in it broke over the room and just then a side door opened and a young man of 27 entered, no older than many of the scoffing students.

Dr. Warren, a little distantly said, "Well, sir, your patient is ready."

The patient was to have a tumor removed from his neck. He showed not the slightest fear as the tube connected with a glass globe containing the ether was applied. In four and a half minutes the patient slept like a child.

Turning to Dr. Warren, Dr. Morton repeated the challenge to him of five minutes before, "Dr. Warren, YOUR patient is ready, sir."

"Gentlemen, this is no humbug," was Dr. Warren's verdict at the close of the operation; and the patient, when he awoke declared: "I have experienced no pain only a scratching like the scraping of the part with a blunt instrument."

Dr. Warren later enunciated his verdict, thus: "A new era has opened for the operating surgeon. His visitations on the most delicate parts are performed not only without the agonizing screams he has been accustomed to hearing, but sometimes in a state of perfect insensibility and occasionally even with an expression of pleasure on the part of the patient. Who would have imagined that drawing a knife over the delicate skin of the face might produce a sensation of unmixed delight? That the turning and twisting of instruments in the most sensitive bladder might be accompanied by a delightful dream? That the contorting of anchylosed joints should co-exist with a celestial vision? And with what fresh vigor does the living surgeon who is ready to resign the scalpel, grasp it and wish again to go through his career under new auspices?"

The inevitable horde of claimants of the discovery arose and made of Dr. Morton's life a tragedy. From an income of $20,000, a year he was reduced to poverty, until, in 1857, Boston friends issued an appeal to the patrons of science and the friends of humanity. The staffs of the great hospitals of Boston, New York, Brooklyn and other cities gave their signatures.

On July 15, 1868, Dr. Morton was stricken with an apoplectic shock while driving with his wife in New York. At St. Luke's Hospital, where he was carried, the surgeon gave one look and turning to the students said, "Young gentlemen, you see lying before you one who has done more for humanity than any other man who ever lived."

A monument in the Boston Public Gardens erected in memory of the discovery and also one in Mount Auburn Cemetery over his grave, erected by the people of Boston, is thus inscribed.

Ether as an Anesthetic, first proved by Dr. Morton

WILLIAM T. G. MORTON
INVENTOR AND REVEALER OF ANÆSTHETIC INHALATION.
BEFORE WHOM, IN ALL TIME, SURGERY WAS AGONY
BY WHOM, PAIN IN SURGERY WAS AVERTED AND ANNULLED
SINCE WHOM, SCIENCE HAS CONTROL OF PAIN.

Ethan Allen—Machinist and Gun Manufacturer

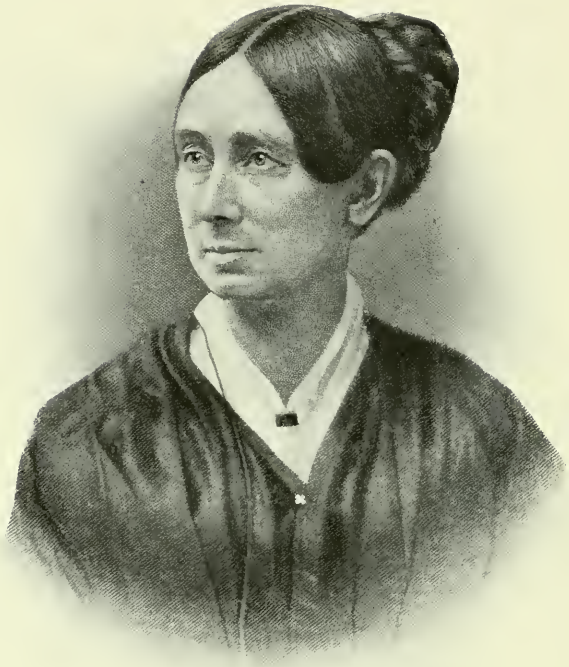
ETHAN ALLEN, of no immediate connection with the Vermont patriot of the same name, was born in the town of Bellingham, Sept. 2, 1806. At an early age he worked in a machine shop in the adjoining town of Franklin, and when of age, began business for himself, so said, "in a small way." In 1831, he was making cutlery in the town of Milford; soon after, removing to New England Village, now North Grafton, he made shoemaker's knives and other tools.

In 1833 he began the manufacture of guns and pistols, continuing thus for several years, being a pioneer in such work, turning out revolving pistols and a breech-loading rifle, similar to Sharp's, but claimed to be better. He also made machines for the manufacture of firearms and very ingenious ones for making metallic cartridges. The exhibit of the firm at the Centennial Exhibition at Philadelphia, 1876, was one of the most notable there.

In the later '40's, he came to Worcester and, at first, was a tenant in the old Merrifield Building and with his fellow-tenants was burned out in 1854. The large stone factory, now a part of the Crompton & Knowles loomworks, near the railroad junction, followed and there he continued until his death, Jan. 7, 1871. After his death, his son-in-law, the late Sullivan Forehand, who had been taken into the business in 1863, carried it on until his own death, many years later.

Many stories are told of Mr. Allen's absolute fearlessness, even capturing in his own house a burglar who did his best to fire one of Allen's own pistols at him. Overcoming the fellow, he turned him over to the police; the famous so called "pepper-box" revolver was of his make.

The Ethan Allen house, now 16 Murray Avenue, was for many years numbered as 320 Main Street, and was, next to the Oread, the distinguishing feature of the southern portion of Worcester's principal thoroughfare. Mr. Allen had purchased the estate in 1847 and he erected the capacious and stately mansion in 1853; sitting a long distance back from the street, in the midst of extensive grounds, the place came near satisfying one's ideas of what an English baronial estate might be. A large fish pond, now back of the residence of the late Thomas H. Dodge, was a conspicuous feature of the estate, as people entered the Main Street driveway. In the march of improvement and development Murray Avenue was run through the very midst of the property and thus relegated the great mansion to a location on a side, though parallel street. For many years it has been the home of Dr. J. O. Marble, another son-in-law of the skillful inventor.



Dorothea Lynde Dix

Dorothea Lynde Dix—One of the World's Noble Women

"AN UNVEILED Sister of Mercy," is the title applied to Dorothea Lynde Dix, redemptress of the world's insane.

She was not born in Worcester but in Hampden, Maine, April 4, 1802, but soon after the household moved to Worcester and made their home on Court Hill on what is now known as the Bliss property. The house now stands at 1 Fountain Street.

Her father, Joseph Dix, was in a continuous state of debt; her mother was a hopeless invalid and they seemed tending toward the poorhouse. Dorothy, however, inherited the spirit of her grandfather, Dr. Elijah Dix, of Boston, with whom she lived for a time. She was endowed with a constitution that could endure 70 years of high-keyed labor 18 hours each day.

She differed from the old Puritanism and advanced to a quality that Puritanic Elijah Dix and Dame Dix never knew.

No good-night kisses, no stories to warm the imagination, no affection to melt the heart or warm the nature in the stately Dix mansion. A special indulgence, granted as a prize, was the making, under the eye of Dame Dix, of an entire shirt, not one stitch of which could vary from the other by the width of a micrometer. Under this and the pressing intellectualism of Boston school life, Dorothy's heart was starved to feed the mind and will.

When her grandmother would have her at the head of a fashionable boarding and day school in Cambridge, Dorothy fitted up the old Dix barn, gathered and educated free the children of the poor. At 24 it was thought that she would die of consumption. The pains in her chest began when she was 14, while teaching school in Worcester, and that condition continued for years.

In 1827 she began a series of journeyings as governess with the family of Dr. William Ellery Channing, also traveling for health. After returning, a Cambridge divinity student, who failed to reach the women of the Cambridge jail, enlisted her help. The condition of these women in winter, only served as a local point to show her like conditions among insane people the world over. From observation she kept a notebook of facts gathered in her travels and armed with these facts she disarmed opposition and at the Legislature of Massachusetts she secured the passage of bills securing better conditions.

In cages, cellars, stalls, pens, chained, naked, beaten with rods and lashed, were confined the "Beasts without souls," "Disenspirited bodies," as the insane were regarded in America.

The passage of the bill for the establishment of the New Jersey Insane Hospital occurred March 25, 1845. That was the first full-fledged triumph. That law was reproduced in over 20 other American common-

John B. Gough

wealths before it leaped the border into Canada and crossed the seas into the Old World. The humane treatment of the insane all over the world is the result of this cultured, sensitive gentlewoman's untiring and self-forgetting labors.

John B. Gough

"Young Man, Keep Your Record Clean"

ALTHOUGH John B. Gough was born in Sandgate, England, August 22, 1817, Worcester claims him as one of her sons, for he was discovered in this town when 25 years of age, at which time, he declared came his second birth.

He looked back upon the years preceding that to "Seven damning years of degradation, from eighteen to twenty-five." Thousands lived to bless the name of Joel Stratton who laid his hand on Gough's shoulder when he was on the point of ending it all; for these thousands were turned from drunkenness to become useful and respected citizens.

When John B. Gough, the great apostle of temperance, first made his appearance in Worcester his wife and child had already died and he himself was ready to go. He planned to go to a railroad track where he would drain a vial of laudanum, stretch what was left of his rum-soaked frame across the rail and end it all. To the track he did go, but the thought of the Beyond held him back. Perhaps it would not end all, and this drove him back to his garret room.

He arrived in Worcester as a strolling comic singer and stage super. He had written to his wife at Newburyport to come to a home he had prepared near where he had procured employment as a skilled mechanic. It was then that his wife and new-born child died, while he lay for ten days in delirium tremens.

One Sunday he was returning from a day of debauch in the meadows of the country side. He thought again of the railroad track and laudanum, when he felt a hand on his shoulder. He turned, expecting a policeman, but found instead Joel Stratton, a waiter in a temperance hotel. Warmed to life by the touch of a friendly hand and the encouragement of having a fellowman have confidence in him, he promised to sign the pledge the next day He was then half drunk and on his way to his cups at a Lincoln Square bar, to go reeling later to his garret, yet this kind word penetrated.

In the morning he steadied his nerves with "a whiskey sling" and another at noon as a "Farewell health to the devil." Then began the battle. He forced his steps to the town hall where the momentous pledge was taken.

In the years that followed, Gough told in his lectures of the fight that followed, of six days and nights in his garret chamber, wrestling there in torture without food or drink, a soul fighting against a hell on earth. The wall featured gorgon faces writhing into life, the room squirmed with bloated insects whose tendrils gradually wriggled up against his face like

Clara Barton

ten thousand spiders, while knife blades contorted themselves in his hands till the flesh seemed in shreds. Yet he kept himself from drink and—conquered.

Gough was asked by the Temperance Circle to narrate his experiences, and again on Burncoat plain in his rags he vividly visualized the demons he encountered. Martin Luther dramatized his experiences as did Gough.

With a grace of expression inherited from an intellectually gifted mother, he cast a spell over hundreds of thousands in both hemispheres. In the first year of 365 days he gave 365 addresses for which he received but $105.90, but in this time he obtained 15,218 names of those who swore to stop drinking.

November 23, 1843, he married Mary Whitcomb, whom he took from the homestead of Captain Stephen Flagg, of Boylston, a homestead a portion of which in later years he reclaimed as his estate and made his wife the head of it. The homestead later became the country home of the late Charles H. Morgan.

February 15, 1886, at Frankford, near Philadelphia, he had spoken 20 minutes to a packed audience. He had just uttered the words—"Young man, keep your record clean," when he fell back stricken with apoplexy. Three days later he died, aged 69. He was buried in Hope Cemetery, Worcester.

Clara Barton—Mother of the Red Cross

CLARA BARTON was born in Oxford, 11 miles from Worcester, on Christmas Day, 1821, and she lived to be over 90 years of age.

"The angel of the battlefield," as thousands of Union soldiers called her, made hard and unremitting work her watchword. "You have never known me without work," she once wrote to friends, "while able you never will. It has always been a part of the best religion I had. I never had a mission, but always had more work than I could do lying before me waiting to be done."

Clara Barton came by this keeping to the path of duty naturally. It was so with her father. In the engagements with the British and the Indians he left his fireside in 1793 for the side of "Mad" Anthony Wayne in the wilds of the Northwestern Territory in Indiana and Detroit. The tales of this hero father made a great impression on her mind and instinctively she, even in her childhood, became a little sister to the soldier.

She believed in courage being truest through overcoming fear and she gained physical courage when in the pastures of her father's 300-acre farm at Oxford, her brother David used to throw her on a half broken colt which he had bridled, jump on another, and holding fast by the mane, speed off on a wild gallop. That experience stood her in good stead when she had on various occasions to mount a strange horse in a trooper's saddle and fly for life and liberty.

The International Red Cross will keep the memory of Clara Barton forever green.

Luther Burbank

Luther Burbank

Machinist—Inventor—Creator

LUTHER BURBANK was a forty-niner, but not one of the gold-seeking kind. The only connection he had with that class of enthusiasts was that he left his Worcester County home for California, whose climate has aided and abetted him in outdoing nature and that he was born on the 7th of March, 1849, in the town of Lancaster.

That genius, wherever found, cannot be hid under a bushel, was as evident in the case of the young horticulturist as in that of many other inventors whose genius was in danger of being frustrated or diverted through circumstances.

Between school terms, at the age of 16, Luther was sent for summer work to the noise and dirt of a machine shop, the Ames Plow Co., of which his uncle, Luther Ross, was superintendent, when his heart was among the plants of Lancaster and Lunenburg. His inventive brain, however, found expression in the factory, and to keep that brain in the factory his pay was multiplied by twenty-five. He constructed a labor-saving machine that would save the work of half a dozen men, and that earned for him by its rapid turning out of pieces $10 to $16 a day. But in the face of this increase, which was enough to carry any boy off his feet, he refused to remain and clung to his one ruling passion, to be true to the plant world's call.

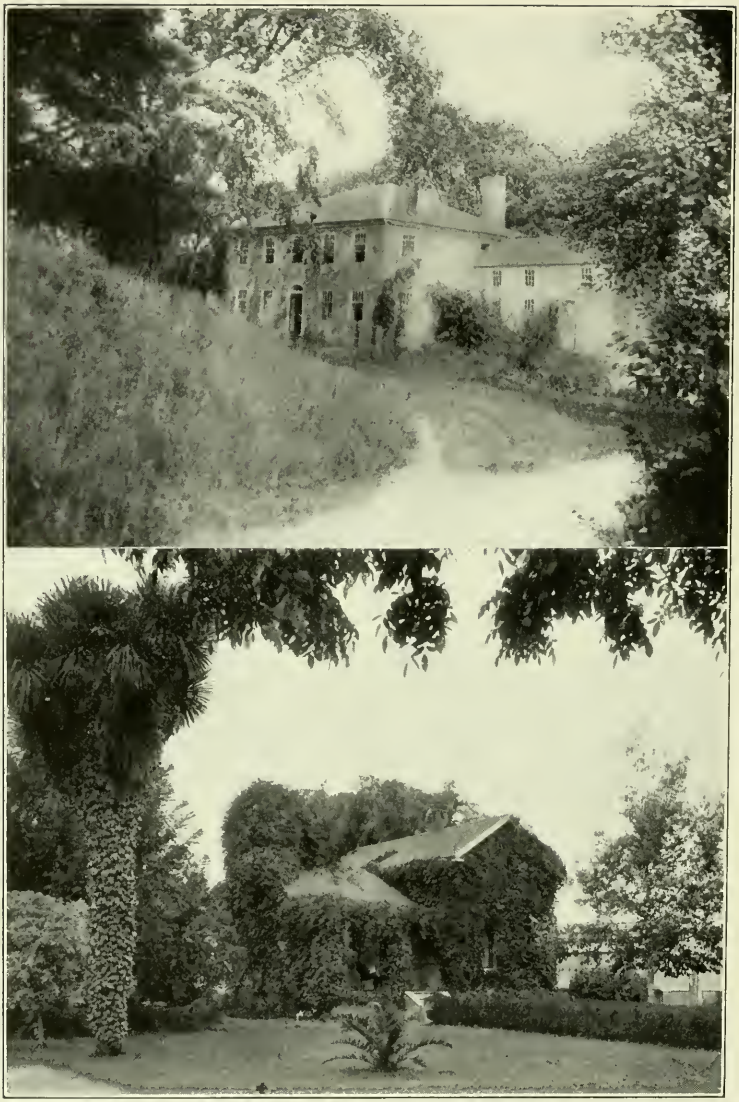
The distinguished scientist was tendered a banquet by the Chamber of Commerce of Santa Rosa, California, recently, and at it he was hailed not only as a man of that city and the United States, but as a man of the world, assistant of God in intensifying nature's gifts to mankind. Many speakers in flowery language paid tribute to the genius of this renowned son of Worcester County.

Burbank was the 13th child of his parents and in his veins ran the blood of his Scotch mother, a race of born horticulturists, and of his English father. The scene of his first great success as a plant-creator was in the market garden in Lunenburg, out in the farm lands some miles from his birthplace. To Luther it was a spot to be approached not with scorn as a place to pull weeds, but as a shrine in which to discern mysteries.

There happened to be in that garden on a single plant of the rose potato plant, an unheard-of thing for that variety, a seed ball.

Luther Burbank discerned it and discerned, too, that it was an unusual growth. The New England potatoes then were very poor. Could not this offer a departure to change their degeneracy and by planting this seed could he not improve the stock? Young Burbank seized upon it without delay; it was the psychological moment of his life.

A stray dog, or other animal knocked the seed ball off the branch, but young Burbank discovered it and treasured it until the following spring. The result of the planting of these 23 tiny seeds was the new splendid product, the Burbank potato.



Luther Burbank's Birthplace, and Cottage at Santa Rosa, Cal.

In 1875, Burbank fulfilled his resolution and started for California. He suffered hunger, loneliness and a deadly fever followed by privations, the lot of many of the early settlers. The fever was brought about by having to sleep in a damp room over a steaming hothouse.

In 1876, the result of his struggles in California left him enough to start a small nursery in Santa Rosa and that same year he was joined by his mother and sister from New England. He found himself, as he said, in a paradise of plants, the chosen spot of all the world for his purpose.

Burbank has been denounced for his meddling with nature and once a callow clergyman invited him to church to hear, unsuspectingly, his own denunciation.

Soon after his launching into the work on his own account an advertisement appeared in a California paper to fill an order for 20,000 prune trees in nine months. Burbank at once decided to fill the order, and he searched the country side for helpers. With their aid he planted all he could obtain of the seeds of the almond, the most rapid-growing of all trees. On the sprouts he budded 20,000 prune buds. In nine months they were ready according to stipulation. Soon he had built up his business that would have meant to him an income of $10,000 a year, but this would leave him no time for experimenting, and that is what he lived for and not for making money

Those passing by his testing gardens at Santa Rosa may see him in the early morning pollinating his flowers or grafting his fruit trees. He watches the bees and other insects and gets from that observation the exact time for the carrying of pollen from one flower to another.

He gathers the pollen from the stamen of one plant on to a watch glass and carefully places it upon the stigma of another. That wind or insect may not refertilize the receiving plant, he cuts and removes the stamen, removing and cutting away the petals, anthers and sepal cup, the pistils alone being left. The Shasta daisy, a very queen of the garden, he developed from the wayside daisy of his native Worcester County, and in this way he has changed the color or the perfume of hundreds of thousands of flowers. And not that alone, but he changes the flavors of fruits. Once he found a plum with the faint taste of a Bartlett pear, and by selection he evolved a plum with more of the taste of the Bartlett pear than the pear itself.

Where success does come, nowhere does it come without cost. A white blackberry, the iceberg, required in the evolution the destruction of 65,000 bushes.

But the greatest achievement of this wonder worker is the dethorning and rendering edible the cactus of the desert. An area of over a thousand million acres, larger in area by far than the United States, is rendered useless on this globe, the arid, parched deserts unpopulated save by the bones of men and beasts and by barbed and deadly cactus. This always flourishes. For 15 years the plant prophet silently worked, experimenting with nearly 1,000 species from all the world's deserts. From the seeds planted, tens of thousands showed no improvement, but the latest results show

giant cacti practically thornless, 8 to 20 feet high, and weigh at the maximum a ton or more each. They will furnish good fodder for cattle and sheep, about one-half as nutritious as pasture grass. For human consumption they produce great quantities of yellow, white and orange-colored fruit, usually three and a half inches in length and two inches in diameter and in shape like a banana or a cucumber, its meat flavoring of the peach, the melon, the pineapple or the blackberry.

Of forage they produce 200 tons to an acre. In comparison to the 20 tons produced of coarse vegetables like beets, turnips, carrots or cabbage, they thus offer the proportionate increase of 200 to 20 based on fact. Therefore is Burbank's prophecy that were the population increased one-third, there could, together with what is already produced, be grown from this desert plant food enough for all.

It is not a mirage of the desert, for the cactus is already extensively used in many quarters of the globe. From the sale of the first five leaves to an Australian firm was built the beautiful new home which Mr. Burbank now occupies. So great does the United States appreciate the work of this plant wizard that he is granted $10,000 annually for ten years from the Carnegie Institute at Washington.

Mary Had a Little Lamb

IT IS SAFE to say that every school child in America, in the last two generations at least, has repeated the lines which made Mary Sawyer the heroine of not only her birthplace, Sterling, but throughout the English speaking world.

There are several small communities which have from time to time claimed Mary Sawyer as their own, but as Mary's relatives still live in the old homestead and these same relatives have given sworn statements to that effect, the honor undoubtedly belongs to Worcester County.

This is the story of Mary and her little lamb. It sounds like a fairy tale but it is not and the incidents may be duplicated many hundreds of times, although there are no poets about to chronicle the story.

Mary Sawyer was born in Sterling, March 22, 1806. Sterling is 12 miles from Worcester, and the little house which still stands is about a mile from the centre of the town and many visit it in the summer months. A honeysuckle gnarled with age, grows over the house and the oldest pictures of it show this same trumpet variety as it appears to-day.

It was through the town of Sterling that the great Indian warrior, King Philip, marched, with his 1,500 savage soldiers, burning all the white men's houses and killing or taking captive the people.

But to return to Mary. The lamb was born—one of twins—one cold bleak March night, and the following morning when Mary went out to the barn with her father they found this particular lamb cold and hungry, deserted by its mother. Mary adopted the lamb, nursing it back to health, sitting up with it one whole night by the fire. Naturally it became

her devoted playmate and following her to school was one of the happenings to be expected. The lamb was aided and abetted, however, by Mary's mischievous little brother, Nate, and they reached school before the teacher, Miss Polly Kimball. Mary settled the lamb at her feet and there it lay quietly until Mary was called to the teacher's desk to recite. Presently the clatter, clatter, clatter of little trotters was heard as the lamb, as usual, followed Mary, to the great amusement of the children. "And so the teacher turned it out." Mary herself said that she shut it into a shed until recess and she then took it home.

That this funny little incident in a child's school life became famous, is hinged on the fact, that there happened to be a visitor in the school that day. A young man named John Roulstone, Jr., a freshman at Harvard University, who was tutoring with his uncle, Rev. Lemuel Capen, in the town of Sterling. He was so highly amused that he wrote the verses and visited the school the following day and presented the verses to Mary.

Mary married Columbus Tyler in 1835. He was superintendent of the McLean Hospital for the insane in Somerville. She afterwards became matron for the same institution which position she held for 35 years. She outlived her husband many years and died at the age of 83. December 11, 1889, and is buried in Mount Auburn Cemetery, Cambridge.

When the loyal women of Boston wished to preserve the historic Old South Church which played such an important part during the American Revolution, Mary was asked for a contribution. For many years she had kept two pairs of stockings made by her mother from the wool of her lamb. It was the last material remembrance she had, but she sent them to the fair. They were unravelled, and pieces of the yarn tied to cards which bore her autograph.

It was from the tower of Old North Church that Paul Revere gave the signal that "the Redcoats had arrived." "Two if by land and one by sea" was to be the lantern signal code. The British showed little sentiment for the old South building, and tearing out the pews turned it into a riding school. It was the first church in Boston in which religious services were held commemorating the Declaration of Independence and the British soldiers marched to service there.

The lamb was gored to death by a cow one Thanksgiving morning.

Andrew H. Green—Father of Greater New York

ANDREW HASWELL GREEN. Born October 6, 1820, in the old house, afterwards incorporated in the large mansion now standing in Green Hill Park. He was a cousin of Dr. John Green, the principal founder of the Free Public Library, Worcester. He went to New York City to live in 1835 and soon studied law there; latterly, under Samuel J. Tilden, whose confidential friend he became and who made him an executor and trustee under his will. He was president of the Board of Educa-

tion in New York, president and executive officer of the Commissioners for establishing Central Park, president of the Board of Commissioners on the Niagara Reservation.

Mr. Green was especially known as a vigorous and effective agent in overthrowing the Tweed ring, and, because of his conspicuous and telling work in bringing about the union of old New York, Brooklyn and other places, as the Father of Greater New York. He was killed Nov. 13, 1903, being mistaken for another man.

Lucy Stone—Woman's Rights Advocate

IN WORCESTER COUNTY, at West Brookfield, August 13, 1818, was born Lucy Stone, one of the early Massachusetts coterie of women who clamored, spoke, worked and wrote for women's rights, but in a somewhat different manner from their English cousins.

Lucy Stone died at Boston, Oct. 18, 1893, aged 75 years, and though a score of years has passed since her death, she is well remembered for pioneer work in a field of endeavor which is now much more popular for both men and women to favor than it was in her day.

Hon. Stephen Salisbury—Worcester's Wealthiest Citizen

STEPHEN SALISBURY was born in Worcester, March 31, 1835. He died November 16, 1905, a multimillionaire, Worcester's wealthiest citizen. He was the third in the family of that name. Educated in the public schools, he graduated from the Worcester High School and Harvard Law School. He was a member of the Worcester Bar, was in the City Council, the Massachusetts Legislature, traveled extensively and was at the time of his death connected with many institutions. His public bequests were many, chief of which was that to the Worcester Museum, to which he bequeathed $3,000,000.

Edward Augustus Goodnow

EDWARD A. GOODNOW, financier, merchant, philanthropist was born in Princeton, 12 miles from Worcester, July 16, 1810. He was president of the First National Bank of Worcester, one of the most foremost banks of the Commonwealth and was instrumental in the erection of the First National Bank Block, a five story marble structure.

He regarded slavery as a curse and was one of the first eight men in his town to adopt the propaganda of the Free Soil Party, which has as its principles, "A common resolve to maintain the rights of free labor against the aggressions of the slave powers, and to secure free soil to a free people." It also declared that "Congress has no more power to make a slave than to make a king."

When the civil war broke out he was too old himself to shoulder a musket but 13 of his clerks marched one after another to the battlefield, aided by him in every tangible way to fight for the Union.

He gave liberally in assisting to equip Massachusetts troops. He headed a Worcester subscription with $500 to assist Gov. Andrew enlist and equip the first regiment of colored troops ever formed for service.

One of his evidences of regard for "The Nation's Honored Dead" is found in 15 marble tablets in the Classical High School erected by him in memory of 15 students of that institution who gave their lives for their country. He gave a life-size portrait in oil of President Garfield, and another oil portrait of Vice-President Henry Wilson to the Mechanics Association. He gave a bust of Gen. Grant to the school, the sum of $40,000 was contributed by him in establishing a library building in Princeton, and many were his benefactions to American colleges and deserving institutions.

He gave a chime of ten bells to Plymouth Church and also its organ. The Young Women's Christian Association received a generous contribution of $30,000 at various times.

His gifts for patriotic, educational, charity and church purposes probably amounted to a quarter million dollars.

He died in Worcester Feb. 1, 1905, aged 94.

Col. Calvin Foster

THE FIRST iron-front building erected in the Eastern States was built by Col. Calvin Foster at the corner of Main and Pearl streets. It was designed by Col. Foster, who was one of Worcester's merchants and financiers, and president of the City National Bank.

The building was erected in 1854, and is now occupied by the Duncan-Goodell Co. It is in the Corinthian style of architecture and looks to-day, after 60 years of service, almost as good as new.

Col. Foster rendered splendid service by his practical financial advice and assistance in the early beginnings of the various railroads which desired to make Worcester a central point.

"No Greater Hero than Eli Thayer"

ELI THAYER was born in Mendon, July 11, 1819. He was seventh in direct line from John Alden and Priscilla through Ruth, daughter of Rev. Noah Alden, of Bellingham, who married his grandfather, Benjamin Thayer.

He received his education after district schools, in Bellingham High School, Academy at Amherst and prepared for Brown at the Worcester Manual Labor School, now known as the Worcester Academy.

He taught in the Worcester Academy and became its principal but gave up the position in order to assume the management of his own new

school, the Oread, situated on the opposite hill. He was a member of the School Board and gave much attention to public affairs. He served as Representative in the State Legislature and distinguished himself by presenting a bill to incorporate the bill of mutual redemption.

In 1845 he proposed, and in the next five years successfully carried out the remarkable scheme which made his name one of the important ones in the history of the country. His plan was to settle Kansas which was organized and opened for settlement as a territory, 1854, with enough anti-slavery supporters to make it a free state. He organized the Immigrant Aid Company and had it incorporated, and so convincing was his eloquence, so great the interest and enthusiasm of the times and so businesslike and practical his plan, that a large number of immigrants were found to help him carry it out. The towns of Lawrence, Topeka, Manhattan and Ossawatomie were settled and Kansas was added to the free states.

Charles Sumner said he would rather have the credit that is due to Eli Thayer for his work on behalf of Kansas than be the hero of the battle of New Orleans.

In an address delivered by Hon. William H. Taft, then Secretary of War, May 30, 1904, at the 50th anniversary of the Kansas-Nebraska Act by Congress which opened these territories for settlement and provided for territorial government, he said, "There are no greater heroes than Eli Thayer, of Massachusetts, and Charles Robinson, of Kansas, who almost alone and single-handed entered upon the work of peopling a vast territory with free and brave men so as to forever exclude human slavery from its limits." So it was that on the 29th of January, 1861, almost within hearing of the guns that boomed out the beginning of the Civil War at Fort Sumter, Kansas was christened and accepted as a state of the Union from which slavery should ever be excluded.

Industrial Welfare Work

MANY WORCESTER MEMBERS of the National Metal Trades Association are to be found in the vanguard of those endeavoring to lighten the burden of daily toil among their employees.

Several firms have provided recreation and dining rooms; others, libraries; others, again, have furnished a home for the benefit of their women employees, where the latter may enjoy good, substantial food at cost.

Still others give the wherewithal to furnish an enjoyable day's outing in summer, paying all the expenses, and some invite their employees to a sleighride and supper in the winter. All the members supply the very best sanitary buildings and the equipment wherewith to work that is possible.

But it makes no difference through what medium the employers make work people happy and contented—whether with fair compensation, reasonable hours of labor, good sanitary conditions and other attractions, or all of these combined, it should not be forgotten that personal friendliness and appreciative words also go a long way towards making loyal employees.

Ex-President Taft—Aunt Delia and Millbury

EX-PRESIDENT William Howard Taft first came to Millbury to see his Aunt, Delia, when a very small baby. The people of the town did not see much of him, however, until about 1870, when he was 12 or 13 years old. He then attended school in the Union Building and played in the village with boys of his own age. One day, about this time, his father took him down to the "swimming pool" where a crowd of other small boys were gathered and told him that he too might learn to swim. It was not a great while before William was able to enjoy the sport with the rest.

From this time until his entrance to college, he spent the winter at his home in Cincinnati, and during summers he and his brother Horace, and a sister, came to the home of his Aunt Delia. One summer he received private tutoring from E. S. Hume, then principal of the High School at Millbury. Mr. Hume states that they studied Virgil most of the summer and that his pupil showed unusual knowledge of the subject.

He entered into the life of the village, fishing, swimming, and driving over the surrounding country with the other boys with his grandfather's horse and carriage. With his jolly manner and merry smile he became very popular with every one and was always surrounded with people of his own age. He was far from aggressive, but believed in standing up for his rights at all times, to which a portion of his popularity was due.

After entering college, his vacations in Millbury became shorter and less frequent.

Although in after life he met dignitaries and people of note, he never forgets the pleasant summers at Millbury and the acquaintances of his boyhood days. They have a very warm place in his heart.

A Patriotic Creed

WE believe in our country—the United States of America. We believe in her Constitution, her Laws, her Institutions and the principles for which she stands. We believe in her future—the past is secure. We believe in her vast resources, her great possibilities—yea, more, her wonderful certainties.

We believe in the American people, their genius, their brain and their brawn. We believe in their honesty, their integrity and their dependability. We believe that nothing can stand in the way of their commercial advancement and prosperity.

We believe that what are termed "Times of business depression" are but periods of preparation for greater and for pronounced commercial successes.

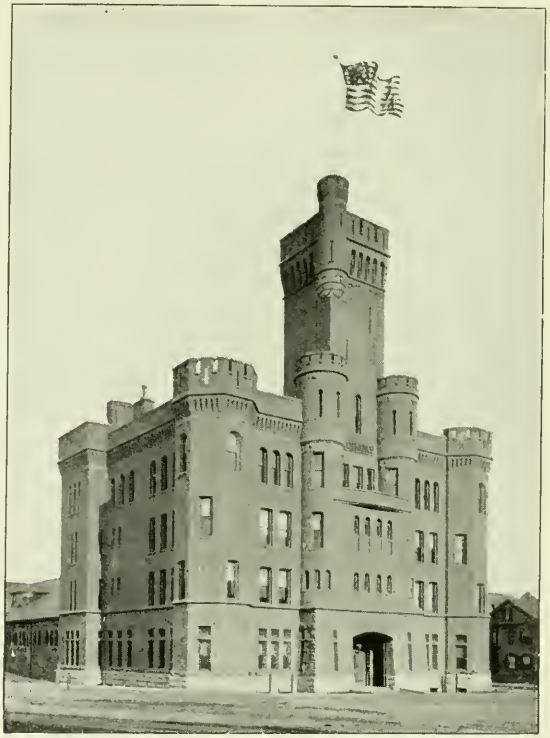
And we believe that in our country are being worked out great problems, the solution of which will be for the benefit of all mankind.

The State Armory

THE FIRST ARMORY was built on Waldo Street, which has since been transformed into the Police and a Fire Station, as it was unsuitable for Armory purposes.

The present Armory at Armory Square was erected by the city in 1888, Cutting & Bishop being the contractors, Fuller & Delano the architects.

The following statement of costs is interesting: 27,000 feet of land, $23,000.00; building, $86,270.00; heating, $3,850.00; total cost with furnishings, $131,991.39.



About two years ago the Armory passed into the hands of the State and was remodeled at an expense of between $35,000 and $50,000. Up to a few years ago the Armory belonged to the city, but at that time the State took over the Armories and reimbursed the cities for their outlay.

About five years ago the city put an addition to the Armory on Grove Street for the accommodation of the artillery.

The following military organizations occupy the building: A Co., Second Infantry; H Co., Second Infantry; C Co., Second Infantry; G Co., Ninth Infantry; B Battery, First Field Artillery, all connected with the Massachusetts militia.

The Centennial of the American Flag

Thou hast not always been, as here to-day, so comfortably ensovereigned.
In other scenes than these have I observed thee, Flag,
Not so trim and whole, in folds of stainless silk;
But I have seen thee to tatters torn, upon thy splintered staff,
Or clutched to some young color-bearer's breast, with desperate hands,
Savagely struggled for, for life and death fought over long,
Mid cannon's thunder crash and many a curse, and groan, and yell, and rifle volleys cracking sharp,
And moving masses as wild demons surging—and lives as nothing risked,
For the mere remnant, grimed with dirt and smoke, and sopped in blood,
For sake of that, my Beauty, and that thou might dally as now, secure up there,
Many a good man have I seen go under.

—*Walt Whitman.*

Worcester in the Civil and Spanish Wars

WORCESTER sent to the Civil war during the four years 3,927 men at a total direct money cost of $586,054. This was a great record, when it is remembered that the population of Worcester in 1860 was 24,960.

Worcester regiments raised in response to the call for troops in '61 were the 15th, 21st, 25th, 36th and 51st with a good representation in the 34th, 42nd and 57th. On its roll of honor were Generals Devens, Ward, Pickett, Sprague, Goodell, and Lincoln.

The Highland Military Academy, after half a century's splendid service in Worcester recently closed, furnished several young officers, among them Lieut. Willie Grout, the youth for whom the poem "The Vacant Chair" was written by Henry S. Washburn.

George H. Ward—Machinist, Soldier

BREVET Brigadier-General George H. Ward was born in Worcester, April 26, 1826. He was the son of Col. Artemus Ward, enrolled in the State Militia of Massachusetts in 1821 and made Captain of the Worcester Light Infantry in 1826.

George Hall Ward was named after one of the early pastors of the Old South Church of which his parents were members. It was their intention to educate him for the ministry, but after passing through the common and high schools at the age of 21, he became a skilled machinist. His mother and a sister dying when he was 16, brought a burden of sorrow which made him thoughtful and self reliant beyond his years. At 21 he enlisted in the Worcester City Guards and through the various grades rose to the command in 1852. He became thoroughly conversant with military duty and maintained the company in a high state of discipline.

He rose to the rank of Brigadier-General of the Fifth-Brigade of Massachusetts Volunteer Militia just before the war began. It was said of him by his old friend, Gen. Augustus B. R. Sprague "with personal knowledge and without fear of contradiction, I affirm that in the school of the soldier, the company, the battalion and the evolutions of the line, as an organizer and disciplinarian, he had no superior in the volunteer militia."

At the battle of Ball's Bluff, Va., October 21, 1861, then Lieut.-Col. Ward of the Fifteenth Massachusetts Volunteers, was severely wounded by a musket ball in the left leg. Subsequently the limb was amputated, but not successfully and the wound was a running sore.

He came back to his home in Worcester and recruited and drilled many Massachusetts regiments at Camps Lincoln and Scott. In February, 1863, he joined his regiment at Falmouth, Va., as colonel, though incapacitated by loss of his leg and weakness and the severe pain which he was obliged

to endure. He was in the Chancellorsville campaign, and on June 14, 1863, commenced that fatiguing Gettysburg campaign.

His limb pained him severely and he was obliged to unstrap his artificial leg and rest the wounded member over the pommel of his saddle on the line of march. His corps, the Second, under Major-General Winfield S. Hancock, arrived on the field of Gettysburg on the evening of July 1, 1863, after the first day's battle. The regiment was brought into line at 4 a. m. July 2, and occupied a position at the very centre of the Federal forces at the so-called "High water mark of the rebellion." After being engaged during the day, Col. Ward was ordered in command of his own regiment and the 82nd New York regiment to a position in advance of the Union line about three-quarters of a mile at a point called the Codori Buildings.

Here they were under fire from the enemy in front and their own forces in the rear. The regiments became disorganized under the onslaught and as Ward was endeavoring to rally and steady his troop he was wounded in the right leg. He was removed at once to the 2nd Corps field hospital when he died about midnight.

He was buried at Worcester, July 8, with the honors befitting his mark. He was breveted Brigadier-General dating from July 2, 1863. His portrait hangs upon the walls of Mechanics Hall. His surviving comrades of the Civil War look upon him as their representative of all who gave their lives and have given his name to Post 10, Grand Army of the Republic of Worcester.

A beautiful monument bearing his bust has been erected over his grave at Rural Cemetery. The members of the 15th regiment, comrades of the City Guards and citizens erected a fitting monument to his memory on the spot where he fell. It was dedicated June, 1886. General Chas. Devens, General A. B. R. Sprague, Congressman W. W. Rice, Major Church Howe paid him a feeling and eloquent tribute. General Devens's words at the dedication of the monument ended as follows:—"May it stand through winter's cold and summer's heat, through sunshine and storm, to attest the patriotic self devotion of a true soldier who died for his country."

Nelson Appleton Miles—A Born Soldier

NELSON APPLETON MILES was born at Westminster, Aug. 8, 1839. He entered the army as a volunteer in 1861, having been a clerk previously in a Boston business house. Upon the outbreak of hostilities he was appointed a captain in the 22nd Massachusetts Volunteers. In time he was promoted to the rank of lieutenant-colonel of the 61st New York. He participated in every battle of the Army of the Potomac, and was always in the front during action. He was thrice severely wounded. His record during these years of warfare easily won him a place among the foremost generals of West Point training.

At the close of the war, having risen to the rank of major-general in the volunteer service, he became colonel of the 40th Regiment in the regular

army. For several years he distinguished himself in the West as an active Indian fighter. He conducted several campaigns against the Indians, notably against the Apaches under Geronimo and Natchez. In 1880 he was promoted to be brigadier-general, and in 1890 to be major-general. During the railroad strike troubles at Chicago in 1884, he was in command of the regular troops sent there to enforce order He represented this country during the Turkish-Grecian War, and later at Queen Victoria's Diamond Jubilee in 1897. During the war with Spain he commanded the American forces. In 1900 he was raised to the rank of lieutenant-general in the army. Last fall General Miles made a trip to the Philippines and upon his return issued a report that called forth general controversy. It is also interesting to note that he opposed the general staff bill to increase the efficiency of the army

General Miles' service to his country has been great. The best years of his life were devoted to the army, and under him it became an effective force. The debt which the country owes to him is great. What his rank as a soldier and general is may be gleaned from an editorial in the New York Sun, wherein the writer compares him to General Roberts, himself a distinguished general

"Lord Roberts, Commander-in-Chief of the British Army, is seven years older than General Miles, the one having been born in 1832 and the other in 1839, and he has passed through a longer period of military service, but relatively to that of the American general it has been in a theatre of war far less majestic.

"Lord Roberts had received the Victoria Cross for personal bravery in the Indian Mutiny campaign three years before General Miles left a business clerkship at Boston to take his lieutenant's commission in the 22nd Massachusetts Infantry; but six years before the English soldier had begun to demonstrate his administrative ability as a quartermaster-general in the Abyssinian campaign, General Miles had passed through the terrible battles of the Army of the Potomac's Peninsular campaign and had won his spurs as colonel of the 61st New York, and during the three subsequent years he was in a hundred engagements, great and small, before he was selected from among the volunteer officers for the rank of colonel in the regular army

"Relatively to the American general's experience of war, that of the British field marshal had been insignificant up to this time, so far as concerns grand operations of war; it had been with comparatively small armies and with detachments of troops. Thereafter, up to 1880, Lord Roberts continued in the Indian service. At the time of the conspicuous achievement by which he won a baronetcy, the defeat of Ayoob Khan at Candahar; he was in command of only 9,000 troops. In South Africa, also, the warfare presided over by Lord Roberts was on a small scale beside that through which General Miles passed from 1861 to 1865. The service of General Miles on the plains after the Civil War would alone entitle him to high soldierly distinction. He practically ended the Indian wars and uprisings that had terrified and devastated vast regions beyond

the Mississippi which since have become seats of populous communities."

After filling the responsible post of lieutenant-general for three years, General Miles has left the army, which he has ever served so well, and where he was ever held in such esteem and confidence. (August, 1903.) In his retirement to private life, General Miles carried with him the memory of a record that time cannot tarnish. History will fully recognize the place he has held with such distinction, both in the army and as a citizen of the republic.

Augustus Sprague—Soldier, Citizen

AUGUSTUS B. R. SPRAGUE was born in Ware, March 7, 1827. His ancestors on both sides were of Puritan stock, his maternal grandmother, Alice Alden, being in the sixth generation in direct line from John Alden who came over in the Mayflower. The subject of this sketch received his education in public and private schools. In 1842 he came to Worcester and entered the employ of H. B. Claflin, afterward the famous New York merchant. Later he was for a time with H. H. Chamberlain, who founded the present establishment of Barnard, Sumner & Putnam Company. He afterward engaged in mercantile business for himself, and as a partner with his father in the firm of Lee Sprague & Company.

He reached his majority and cast his first vote in 1848. He joined the Worcester Guards at the age of 17, and served as private, non-commissioned and commissioned officer, beginning a military career that made him of service to his country in her greatest need.

He was adjutant of the 8th Regiment, and brigade-major and inspector of the 5th Brigade M. V. M., holding the latter office at the outbreak of the war. At the first call for troops, he was unanimously elected captain of the Worcester City Guards, Company A, Third Battalion of Rifles M. V. M., under Major Charles Devens, and served from April 19 to August 3, 1861, during the last month as commander of the battalion, Major Devens having resigned to become Colonel of the 15th Massachusetts Volunteers.

In September, 1861, Captain Sprague was active in the organization of the 25th Massachusetts Volunteers and was commissioned lieutenant-colonel, and participated with his command in the famous Burnside Expedition, and served until November 11, 1862, in its battles and skirmishes, and was officially reported for "bravery and efficiency" in the engagements at Roanoke Island and New Berne.

In November, 1862, he was promoted to be colonel of the 51st Massachusetts Regiment, and was assigned to the 18th Army Corps, serving in North Carolina, Virginia and Maryland.

At the expiration of its term of service, in consideration of the great public peril attending the invasion of Pennsylvania by the army of northern Virginia, Colonel Sprague offered his regiment for further service which was accepted and ordered to Baltimore, thence to Maryland Heights, joining the Army of the Potomac, and only returned to Massachusetts when Lee was rapidly retreating in Virginia.

February 1, 1864, he re-entered the service as lieutenant-colonel of the 2d Massachusetts Heavy Artillery, and later became its colonel. He served with it in North Carolina and southern Virginia, commanding the regiment in its field service, moving with General Schofield to open communication with General Sherman at Goldsboro, North Carolina.

Colonel Sprague was finally mustered out September 20, 1865, after nearly four years of service, and was breveted brigadier-general of volunteers, to date from March 13, 1865, "for gallant and meritorious services during the war."

Gen. Charles Devens—Soldier and Jurist

GENERAL CHARLES DEVENS was a Worcester man although born in Charlestown. He came to Worcester soon after beginning practice of law and had been identified with Worcester throughout a long and honorable career. He always retained a legal residence in Worcester wherever his bodily presence might be and when official duties called him elsewhere he kept his library in the Lincoln house block.

Charles Devens was born in Charlestown, April 4, 1820. He attended the Boston Latin School and graduated from Harvard in 1838. He was admitted to the bar in 1840 and practised in Northfield and Greenfield. In December, 1856, he became the law partner of Hon. George F. Hoar and J. Henry Hill. He was City Solicitor from 1856 to 1858.

Monday, April 15, 1861, when Lincoln's first call for 75,000 volunteers reached Worcester, he left an unfinished trial and hurried to offer his services to the government. He was made major of the Third Battalion Rifles of Massachusetts Volunteers, a three months organization. April 20, he went South and was stationed at Annapolis and Fort McHenry. He was appointed colonel of the 15th Regiment, July 15, 1861.

Devens was at that time in the prime of life and was descended from ancestors who had fought in the Revolution and the War of 1812. He was warm-hearted, powerful in intellect and stature, developed by broad culture and a good range of practical experience. He represented what was best in the traditional character of New England.

He served with the 15th Regiment until the spring of 1862 through the battle of Ball's Bluff where he bore a conspicuous part. In that engagement he was saved from a wound by a button which intercepted a bullet and escaped capture by swimming the Potomac River. At the battle of Antietam, his horse was shot under him. At Chancellorsville he was wounded. At Ball's Bluff he was made Brigadier-General and at the request of General Grant he was commissioned Major-General by brevet in 1865. After the fall of Richmond he was put in command of that city and subsequently he became military governor of Charleston, S. C. In both of these offices his courtly bearing won him a high reputation with the people he ruled and the government he served.

Judge Devens had also a distinguished career as a jurist. He was appointed to the Bench of the Superior Court by Gov. Bullock in 1867

where he remained until 1873, when he was appointed an Associate Justice of the Supreme Court by Gov. Washburn.

In 1877 he resigned his judgeship to accept the position of Attorney-General of the United States under President Hayes, and at the close of the latter's term of office was reappointed in 1881 to the Massachusetts Supreme Bench by Governor Long in place of Judge Soule who had succeeded him four years before.

Judge Devens succeeded General Burnside as national commander of the Grand Army of the Republic, and was for many years president of the Loyal Legion. He was also commander of the Military Society of the Army of the Potomac and the James and the Sixth Army Corps. He was president of the Fifteenth Regiment Association since its organization.

His grandfather having been a Revolutionary officer, of prominence, Gen. Devens was by heredity a member of the Society of the Cincinnati.

The Vacant Chair

ONE OF THE songs of the Civil War, which then, as well as now, touched a responsive chord in every heart was "The Vacant Chair." It was written by Henry S. Washburn, then in Worcester, to the memory of Willie Grout, of Worcester, who was shot at Ball's Bluff.

We shall meet, but we shall miss him,
There will be one vacant chair;
We shall linger to caress him,
While we breathe our evening pray'r,
When a year ago we gathered,
Joy was in his mild blue eye,
But a golden cord is severed
And our hopes in ruin lie.

At our fireside, sad and lonely,
Often will the bosom swell
At remembrance of the story,
How our noble Willie fell.
How he strove to bear the banner
Thro' the thickest of the fight
And uphold our country's honor
In the strength of manhood's might.

True, they tell us wreaths of glory
Evermore shall deck his brow,
But this soothes the anguish only
Sweeping o'er our hearstrings now.
Sleep to-day, O early fallen,
In thy green and narrow bed;
Dirges from the pine and cypress
Mingle with the tears we shed.

Work

By Francis B. Dalrymple

Leave tears to babes, rouse power and mind,
Grasp time, and sow in hope to find,
  A harvest quick with measure;
Wealth follows him who toils the most,
Health, too, doth follow without cost,
And when joy comes no king can boast
  In it a greater pleasure.

Like bat-balls, catch the coin and send
It hot with haste to nearest friend,
  That dull trade times come never;
Make profit magnify on loss,
And mirth the same, to scare each "cross,"
The workman is the public boss,
  Remember, and law giver.

Life's everywhere in earth and act—
Shine up your talent then and tact
  And love the joy of toiling;
The ploughshare's brightened by the ground,
A thinker's test has thought profound—
'Tis rust that wears the axle round,
  More so than work or oiling.

Close not a book till something's learned,
Stop not the toil till something's earned,
  Though slow or long at either;
Work must be done before earth yields
The produce of the harvest fields—
Write "work" your motto on your shields;
  And be the sluggard neither!

Lift up the will then, and command,
The iron arm, the willing hand,
  While steam's within the body—
Keep up the fire of ne'er despair,
Deep bury life's corroding care;
To friend or foe alike be fair,
  And keep the road to God, aye.

General Josiah Pickett

THERE ARE few names among those of the citizen soldiery of Massachusetts entitled to more prominent mention than that of Brevet Brigadier-General Josiah Pickett, of Worcester. This honor and distinction are the result of his native force of character, personal bravery, and actual service in the War of the Rebellion.

General Pickett was born at Beverly, November 21, 1822, and after attending the common schools in his native town, successfully followed a mechanical occupation until called into the service of his country. Early in life he became earnestly interested in military affairs, which led to his enlistment as a member of Company F, 6th Infantry, Massachusetts Volunteer Militia, in July 1840, being elected a lieutenant three years later. The gold excitement in 1849 carried him to California, and upon his return he came to Worcester in 1855, identifying himself soon after with the Worcester City Guards, and at the call for troops in April, 1861, responded as first lieutenant of this company, in which he served with Major Devens's Rifle Battalion at Fort McHenry, Maryland, for a term of three months.

Returning from this service he organized and was commissioned captain of Company A in the 25th Massachusetts Infantry. This regiment formed a part of the famous Burnside expedition that encountered serious peril by sea, the objective being Roanoke Island, where Captain Pickett was officially complimented for gallantry in the engagement of February 8, 1862. He participated in the capture of New Berne, March 14, and was promoted to the rank of major March 20, 1862.

Major Pickett served as such until October 29, 1862, when he was made colonel to succeed Colonel Upton, who had resigned. This splendid regiment, one of the best and bravest, saw most of its distinguished service under the direction of Colonel Pickett, and much of the unrivaled discipline and gallant conduct of the 25th so brilliantly displayed in the War for the Union can be attributed to the ability of its commander.

During the Goldsborough campaign and the subsequent active military operations in North Carolina, Colonel Pickett won further distinction for efficient service. In the spring of 1863 he was in command of the garrison at Plymouth on the Roanoke when seriously threatened by the Confederates and the following autumn successfully commanded the subdistrict of the Pamlico, for which he received honorable mention when ordered to Virginia in December, 1863.

Rejoining his regiment, then assigned to the Army of the James, Colonel Pickett won special praise for courage and military capacity in the operations south of Richmond during the spring of 1864. At Arrowfield Church his bravery and coolness were particularly conspicuous. In the severe fog-fight at Drury's Bluff, after the capture of General Heckman, Colonel Pickett quickly rallied the shattered regiments of the brigade and saved the Union right from serious disaster.

Later, while serving with the army of the Potomac, Col. Pickett achieved his highest reputation as a soldier as he gallantly led his heroic

regiment through that terrible fire at the Battle of Cold Harbor, in which he was severely wounded, and the 25th nearly annihilated, sustaining loss of 73 per cent. in killed, wounded and missing. This gallant charge of the regiment is described by the Confederate General Bowles, who witnessed it from the Rebel entrenchments in these words:

"On looking over the works I discovered what I supposed one regiment, with an officer in front, with sword raised high in air, calling on his men to charge. The heroic regiment that made this gallant charge was the 25th Massachusetts, which was the only regiment that obeyed orders to advance. The balance of the brigade had refused to go forward, and not since the charge of the Light Brigade at Balaklava has a more heroic act been performed."

For distinguished bravery on this occasion and meritorious conduct during the war, Colonel Pickett was commissioned, Brevet-Brigadier-General, to date from June 3, 1864. It was not until the following November that General Pickett returned to his regiment. He was still suffering severely from his wound and being disabled from further active military duty completed his regimental reports, took leave of his old comrades, and retired from the service in January, 1865, carrying with him the respect and good wishes of the officers and men who, under his command, had performed their duties so faithfully and fought so gallantly to sustain the honor of the flag and the supremacy of the government. It was said of him that he was "a hero commander of a heroic regiment."

General Pickett, in September, 1866, was appointed postmaster of Worcester, discharging the duties of this office for more than 20 years.

General Pickett was a charter member of the Massachusetts Commandery of the Loyal Legion, President of the 25th Veteran Regiment Association, member of the Grand Army of the Republic.

General Pickett died January 14, 1908.

The Soldiers Monument on the Common

THE GREAT MONUMENT on the northeast corner of the Worcester Common, erected to the memory of the soldiers of Worcester in the War of the Rebellion, was dedicated July 15, 1874. It was designed by Randolph Rogers and cost $50,000, being one of the largest and most imposing of its kind in the country.

Among those present at the unveiling were Vice-President Henry Wilson, General A. E. Burnside, of Rhode Island and later United States Senator, ex-Governors Bullock and Boutwell, Gen. Charles Devens, Gen. Josiah Pickett, Gen. Robert H. Chamberlain, Gen. William S. Lincoln. Among leaders of divisions who participated in the parade were Lieut.-Colonel Joseph A. Titus, Captain David M. Earle, Lieut. John J. O'Gorman and Alzirus Brown.

The monument bears the names of those from Worcester who died in the service.

Three Young Worcester Martyrs

THE CIRCUMSTANCES attending the death of Lieutenant Edmund N. Benchley, who was killed at San Juan, in the Spanish War, son of Charles H. Benchley, of Worcester, are similar in a certain degree to those connected with the fall in battle of two others,—Lincoln and Grout, martyrs of different wars. All three were Worcester-born. Each was in the thick of the fight when the fatal bullet struck, and the untimely fate which overtook them has called forth the most sincere expression of private regret and public eulogy.

Captain George Lincoln, killed in the battle of Buena Vista, was a son of ex-Governor Levi Lincoln, and was 31 years old at the time of his death. He was struck by a shot in the back of the head "when facing a regiment, riding in front, and encouraging them on at a critical moment when they were faltering under a severe fire. His situation was a most exposed one, a situation which would have been mere foolhardiness to take except under the circumstances of this battle, where the troops were chiefly volunteers, and all depended on the officers. Lincoln was acting as adjutant-general, and had no command of the regiment, but seeing them falter, he rode in front and cheered them on by example as well as by word."

Lieut. John William Grout, who fell at Ball's Bluff, October 21, 1861, was born in Worcester in 1843, and had barely attained the age at which a legal claim could be made upon his services when he fell a voluntary sacrifice on the altar of his country. He was the only son of Jonathan Grout, and early manifested signs of a military spirit by which he was animated. He was educated at the Highland Military School, in Worcester, and after enlistment his services were in demand in drilling volunteers. He received a commission as second lieutenant in Company D of the famous 15th Massachusetts Regiment, and gained the confidence and friendship of his company and the whole regiment. In the battle in which he fell, his valor was conspicuous, and in the last hour his coolness, discretion and generosity did not forsake him. He crossed the stream in a boat with the wounded, and returned for more, and dispatching the second boatful, remained upon the shore until hope of further successful resistance vanished. He then plunged into the stream, but before he could reach the opposite shore the fatal ball of the barbarous assassin left him only time and strength to exclaim, "Tell Company D that I should have escaped, but I am shot"

Lieut. Edmund Nathanial Benchley was born in Worcester, March 3, 1876. He was educated in the public schools, and appointed a cadet at West Point by the late Congressman Joseph H. Walker, graduating with the class of 1898. He was at once commissioned a second lieutenant, Sixth Infantry, United States Army, preferring the infantry to the artillery or cavalry service, as it promised better opportunities in the Cuban War for active duty. He proceeded to Florida in May, and with the regulars landed in Cuba the latter part of June, where the active engagement of that short campaign soon followed.

On the first day of July the battle of San Juan took place. In crossing the San Juan River, under a severe artillery fire, several companies were separated from the advance portion of the troops, and the colonel desired them to be brought up at once. "He called Lieut Benchley, and directed him to recross the river and carry orders to the battalion and company commanders to bring their commands forward at once. He started at once on this important and dangerous duty, and gave the orders to some of the officers indicated. He had just given it to one commander when he received a bullet through the heart, killing him instantly. His military career was brief, brave and glorious. He was cool and brave under one of the severest fires ever known, and he performed his duty nobly and gallantly. Had he lived he would have been brevetted for gallantry in action."

Worcester County had thousands of just such men as Lincoln and Grout and Benchley in the ranks in America's last two wars.

Sergeant Plunkett—Who Lost Two Arms In The Civil War

SERGEANT THOMAS PLUNKETT, E Company, 21st Regiment, who enlisted from West Boylston, was a notable figure while he was a doorkeeper at the State House at Boston for a number of years, because of the fact that both sleeves were empty. One of Worcester County's bravest sons, his fellow-citizens paid tribute to his memory when he passed away. He was buried from Mechanics Hall and the colors which he saved at so dear a price, and which have since rested in the hall of flags at the State House in Boston, were brought from Boston by special permission and laid on his coffin.

It was at the battle of Fredericksburg that the plucky fellow met with the horrible mutilation. The 21st regiment was under artillery fire from the impregnable position of the rebels on Marye's Hill. The Northern colors had fallen again and again. Plunkett sprang to raise the Stars and Stripes as they fell with the mortally stricken Color-Sergeant Collins; while Color-Corporal Wheeler was loosening the dying grasp of Color-Corporal Barr from the staff of the white flag of Massachusetts and Olney soon seized the national banner, now wet with the blood of the armless Plunkett. A shell had carried away both arms and wounded him in the chest. His recovery was a great surprise and joy to his comrades for it was taken for granted that his wounds were mortal.

At a re-enlistment reception given to the 21st Regiment who survived so far, Feb. 1, 1864, Plunkett walked in the procession from City Hall to Mechanics Hall, besides the colors which had cost him so dearly. He attracted much attention with his two empty sleeves.

Hon. Alfred Roe—Worcester's Most Versatile Veteran

HON. ALFRED S. ROE, soldier, educator, orator and versatile genius generally, has given to Worcester the impress of his personality in many lines of civic activity. His military life has made him indispensable at all gatherings of veterans, where his ready story is one of the greatest charms of all these reunions.

For many years he was principal of the Classical High School, and in these early years of the school's history the solid foundation of character of many of Worcester's most substantial men and women was laid.

Mr. Roe is now principal of the Evening High School, and through that medium is extending to young people who could not grasp advantages in their youth the means of reaching greater success in life.

As an author, a writer for magazines and newspaper editorials, few have the faculty of this versatile veteran of timely criticism, advocacy or advice, and the kindly sketches of fellow-citizens who have gone to that bourne from which no traveler returns have solaced many aching hearts.

Hon. A. S. Roe is in the prime of life, although nearly the Biblical period allotted to man of threescore years and ten, but there are few business men in Worcester a score of years younger than he is, whose mentality is so active and his physical powers so sturdy.

Alfred Roe is one of the unusually strong personalities of the Heart of the Commonwealth, and fills a niche in its life and history which cannot be duplicated by any other citizen. May he live as long as his venerable and reverend father, who died in New York State early in March, this year, at the age of 90 years and 6 months.

Two Famous Worcester Women

THIS WORCESTER, the City of Prosperity Book, was intended mainly for the glorification of men who did deeds and worked wonders, but it will be glorified by, and would not be complete without, a brief reference to two famous women—Fannie Bullock Workman and Alice Morse Earle.

Both these women were born in Worcester, and their names have brought renown to the city.

Fannie Bullock Workman is the daughter of the late ex-Governor Alexander H. Bullock, and was educated at the Worcester public schools. She married in 1881 Dr. William Hunter Workman, of this city, and for many years has been known as a noted traveler, explorer, author, lecturer. She holds the world's mountaineering record for women.

Alice Morse Earle was born in 1853. In 1874 she married Henry Earle, of Brooklyn, N. Y. Much of her life has been devoted to writing magazine articles, and later to the publishing of popular books, mainly on colonial life and customs. She died in 1911.

Worcester's Part in the Programme for the N. M. T. A. Convention, Hotel Bancroft, April 20-22, 1914

THE FOLLOWING PROGRAMME tells briefly what features of the Convention the Worcester Branch has arranged for the benefit of the delegates, their wives and the Branch Secretaries:

Entertainment for Delegates

Monday, April 20, 11.00 a. m.—Leave the Bancroft for visit to Trade School for Boys.
12.30 p. m.—Return to Bancroft.
2.00 p. m.—Leave Bancroft in autos for visit to Crompton & Knowles Loom Works and Worcester Polytechnic Institute.
7.00 p. m.—Dinner for delegates in Bancroft—entertainment in charge of E. P. Crerie and Dr. A. J. Harpin. Rev. Dr Willard Scott is after dinner orator. Pres. John W. Higgins will preside.

Tuesday, April 21, 9.00 a. m.—One party will leave the Bancroft for South Works, American Steel & Wire Co.
Another party will leave Bancroft for shops of Norton Grinding Co., Norton Co., Worcester Pressed Steel Co., Heald Machine Co. and Bradley Car Works.
1.00 p. m.—Lunch at Bancroft.
2.00 p. m.—Convention opens.
7.00 p. m.—Reception to National Officers—Dinner—Dance.

Wednesday, April 22, 9.00 a. m.—Convention.
2.00 p. m.—Convention.
7.00 p. m.—Convention Banquet.

Entertainment for the Ladies

Monday, April 20, 12.00 noon—Ladies will leave The Bancroft for trip in autos to Brigham Hill, a fine New England Tea House, erected in 1728, where lunch will be served. Leave Brigham Hill at 2.15 p. m. for a ride to the Metropolitan Reservoir at Clinton—thence to the home of Mary Sawyer, at Sterling, whose

lamb followed her to school. Arrive at The Bancroft at 5 p. m., in time to prepare for Theatre Party at 8 p. m., to witness "The Sunshine Girl," with wives of Worcester Executive Board.

Tuesday, April 21, 10.00 a. m.—Ladies leave from Bancroft in autos for trip to Woman's Club, Worcester Art Museum, Royal Worcester Corset Co.'s shop, where lunch will be served. Then auto ride to Spencer and around Lake Quinsigamond. Return to The Bancroft in time to prepare for Reception, Dinner, Dance.

7.00 p. m.—Reception—Dinner—Dance in Bancroft Ballroom.

Wednesday, April 22, 10.00 a. m.—Ladies leave Bancroft in autos to visit Girls' and Boys' Trade Schools, thence to Tatnuck Country Club for lunch at 12.30 p. m., after which golf or cards can be indulged in during afternoon. Arrive at Bancroft at 5 p. m. in time to prepare for dinner at 6.30 p. m., with wives of Executive Board members. At 9 p. m. adjourn to messinine floor to listen to music and addresses at Men's Banquet.

Branch Secretaries

Monday, April 20, 4.00 p. m.—Auto trip to Metropolitan Reservoir, dinner in Sterling Inn, theatre in evening.

Tuesday, April 21, 8.00 a. m.—Secretaries Breakfast in The Bancroft.

Convention Committees

In Charge of Entertainment for Lady Visitors

Mrs. Donald Tulloch
Mrs. John W. Higgins
Mrs. E. C. Harrington
Miss Clara L. Matthews
Mrs. Gilbert H. Harrington
Mrs. C. M. Stewart
Mrs. A. E. Newton
Mrs. J. Herbert Johnson
Mrs. W. A. Layman
Mrs. John D. Hibbard

In Charge of Entertainment for Delegates

John W. Higgins, chairman
John W. Harrington
Frank L. Coes
John C. Stewart
J. Herbert Johnson
Arthur P. Higgins
C. H. Norton
F. S. Morton
A. C. Marble
Henry H. Wright
A. W. Beaman
Donald Tulloch
George Crompton
Reginald Washburn
Jerome R. George
Frank O. Woodland
James N. Heald
A. S. Miller, Jr.
Samuel T. Hobbs
E. M. Woodward, Jr.

In Charge of the Reception—Dinner—Dance

President Higgins, the officers and members of Worcester Branch, Executive Board. Also, John W. Harrington, Gifford K. Simonds, Col. S. E. Winslow, George Crompton, Reginald Washburn, Arthur P. Higgins, Chas. E. Hildreth, Geo. N. Jeppson, Channing Wells, Harry G. Stoddard, Frank O. Woodland, Herbert E. Jennison, W. M. Whitney, F E. Wing, Chas. F. Marble, C. L. Wright, Hamilton B. Wood, Warren G. Davis, W. W. Armour, Donald Tulloch.

Entertainment for Secretaries

Donald Tulloch

Emergency Committee

John W. Harrington
A. E. Newton
Frank L. Coes

Committee on Automobiles

John W. Harrington
Donald Tulloch

Information Bureau

Miss Elizabeth M. Tulloch

Distances from the Heart of the Commonwealth

WORCESTER is distant from:

Fitchburg	26 miles
Athol	44 "
Boston	44 "
Providence	44 "
Nashua	47 "
Springfield	55 "
Manchester	64 "
Hartford	81 "
New Haven	118 "
Bridgeport	134 "
Portland	149 "
Albany	158 "
Schenectady	175 "
New York	192 "
Utica	253 "
Philadelphia	280 "
Montreal	306 "
Syracuse	306 "
Baltimore	376 "
Rochester	387 "
Washington	418 "
Buffalo	454 "
Toronto	556 "
Pittsburg	634 "
Cleveland	638 "
Detroit	706 "
Toledo	756 "
Columbus	777 "
Chicago	901 "
Cincinnati	901 "
Indianapolis	922 "
Atlanta, Ga.	1014 "
Milwaukee	1076 "
St. Louis	1186 "
Minneapolis	1347 "

Illustrations

	Page
"We Are Seven"	4
John W. Higgins, President, Worcester Branch, N. M. T. A.	6
Bancroft Hotel	8
Tower, Old Union Depot and New Union Depot	10
Institute Park Bridge	12
Sagamore John	18
Worcester's First City Hall	18
Tablet on Davis Tower	20
"The Spirit of '76"	24
Ginery Twichell of Worcester	26
Worcester's Old-time Locomotive "Lion"	28
Boston Passenger House	30
New Union Depot	32
New Worcester City Hall	34
Main Street, Worcester, 50 Years Ago and Now	36
Worcester Post Office	38
Worcester County Courthouse	42
Worcester as a Shipping Centre	46
Fitchburg Courthouse	50
Park System	52
Mount Wachusett	54
Art Museum School	58
Woodward & Powell Planer Co. Shop	60
Bancroft Tower	62
Worcester Labor Bureau—"Where We Do Our Work"	64
Worcester Labor Bureau—"The People We Work For"	66
The Wire Goods Co. Plant	70
Reed-Prentice Co. Shops	72
Whitcomb-Blaisdell Machine Tool Co.'s Plants	76
Heald Machine Co.'s Works	80
Hobbs Manufacturing Co.'s Shops	82
Milton Prince Higgins	84
Worcester Pressed Steel Co.'s Works	86
Norton Company's Shops	88
Curtis & Marble Machine Co.'s Plant	92
Norton Grinding Co.'s Works	96
Stockbridge Machine Co.'s Shop	98
Baldwin Chain & Manufacturing Co.'s Shop	102
Matthews Manufacturing Co.'s Plant	104
Harrington & Richardson Arms Co.'s Works	106
Loring Coes	108
Coes Wrench Co.'s Works	108

Page

Parker Wire Goods Co.'s Shop . . . 110
The Samuel Winslow Skate Mfg. Co. Plant . . . 112
Graphic Arts Building . . . 114
Stewart Boiler Works . . . 116
John J. Adams Shop . . . 118
L. S. Starrett . . . 120
The L. S. Starrett Co. Works . . . 120
Warren Steam Pump Co. Shop . . . 122
Baxter D. Whitney & Son Plant . . . 124
Baxter D. Whitney . . . 126
M. S. Wright Co. Shop . . . 130
Coates Clipper Mfg. Co. Shop . . . 132
Wyman & Gordon Co.'s Works . . . 134
David H. Fanning . . . 136
Dupaul-Young Optical Co.'s Works . . . 140
Charles H. Morgan . . . 142
William A. Richardson . . . 144
Gilbert N. Harrington . . . 148
Fitchburg Steam Engine Co.'s Works . . . 152
Worcester Polytechnic Institute . . . 154
Lapointe Machine Tool Co.'s Shop . . . 158
Worcester Boys' Trade School . . . 160
Worcester Trade School Work . . . 162
Daniel Simonds . . . 166
Charles F. Putnam . . . 170
H. O. Putnam . . . 170
Clark University . . . 172
Alonzo Whitcomb . . . 176
George W. Wells . . . 178
American Optical Co.'s Works . . . 182
Union Twist Drill Co. Plant . . . 184
Dexter Harrington . . . 188
Harrington Cutlery Co.'s Shop . . . 190
Worcester Art Museum . . . 192
Simonds Manufacturing Co.'s Plant . . . 194
Universal Boring Machine Co.'s Shop . . . 198
Athol Machine Co.'s Works . . . 200
Charles G. Allen Co. Plant . . . 202
Worcester Woman's Clubhouse . . . 204
Leavitt Machine Co.'s Shop . . . 208
Odd Fellows' Home . . . 210
Mechanics Hall . . . 212
John D. Hibbard . . . 222
Exchange Coffee House . . . 224
South Mere, Elm Park . . . 226
W. A. Layman . . . 230

	Page
Herbert H. Rice	232
Old United States Hotel, Worcester, Mass	240
M. H. Barker	236
Amos Whitney	244
Lucian Sharpe	246
Samuel E. Hildreth	248
Joseph Flather	250
Samuel Winslow	252
E. T. Marble	252
Watching the Battle of Bunker Hill	260
George Bancroft	262
George Bancroft's Birthplace	264
Artemus Ward	266
Artemus Ward's Home	268
Artemus Ward's Kitchen	270
George Frisbie Hoar	272
Eli Whitney	274
Elias Howe	276
Elias Howe's Birthplace	278
William Morton	280
Ether First Proved by Dr. Morton	282
Dorothea Dix	284
John B. Gough	286
Clara Barton	288
Luther Burbank	290
Luther Burbank's Birthplace	292
The State Armory	300

Contents

	Page
A Dedication and Confession	3
We Acknowledge Thanks	5
The Philosophy of Learning a Trade	7
To Metal Trades Men—Greeting	9
"Cead Mille Fealthe"—100,000 Welcomes	13
"Fair Worcester"	17
"Worcester—City of Prosperity"	19
Worcester First Settled	21
Worcester's Population Since 1722	31
Worcester's City Hall	33
From Old Worcester to New Worcester	37
George Merrill Wright—Machinist, Farmer, Mayor	39
Worcester's Municipal Affairs	40
Some of the Things Worcester Does	44
Worcester's Financial Standing	49
Entertainment Houses and Halls	49
Park System	51
Worcester Post Office	51
Worcester—A City of Hills	53
"Up Wi' the Hammer, Mate,"	55
Worcester—A Manufacturing Centre	56
Some Kinds of Machinery and Specialties Made in Worcester	57
Three-quarters of a Century of Machine Tool Operation	59
Milled Machine Screws	63
Worcester's Valhalla in Mechanics, in Inventions and in Business Management	65
Alphabet of Worcester Branch, N. M. T. A.	67
Officers and Members of Worcester Branch	68
The Industries of Worcester after 50 Years of City Life	71
"Blessed are the Horny Hands of Toil"	77
Thomas Blanchard—His Versatility in Invention	78
Milton Prince Higgins—Father of the Trade School Movement	85
Plunger Elevators	89
George Ira Alden—Inventor, Educator	90
The Crompton Loom	90
Norton Company—Pioneers in Emery Wheel Work in the World	94
Norton Grinding Company—Made Grinding an Art	95
Worcester's Biggest Industry—Wire	99
Worcester—Pioneer in Envelope Making	105
The H. & R. Dependable Firearms	109
Loring Coes—Inventor	109
Charles Hill Morgan—Inventor, Engineer	111

	Page
William T. Merrifield—Carpenter and Promoter of Industries	113
Osgood Bradley Car Company	113
The Samuel Winslow Skate Manufacturing Company	115
American Car Sprinkler	115
Morgan Construction Co.—Pioneers in Rolling Mills	115
Charles Thurber's Typewriter	115
World Labeling Machines	117
Pliny Earle—Card Clothing Expert	119
L. S. Starrett—Mechanic, Dairyman, Inventor	121
Tech Graduate Made First Auto in America	123
Warren Steam Pump Co.	125
Just Stiffen the Upper Lip	125
Warp Compressing Machine	127
Rice, Barton & Fales—Paper Machinery Manufacturers	127
Baxter D. Whitney—Inventor, Oldest Member of the Worcester Branch	127
A Thousand Vacuum Cleaners per Day	129
Albert Curtis—Manufacturer, Benefactor	131
George H. Coates—Inventor and Designer	131
Henry D. Perky—Inventor, Idealist, Soldier	133
Eight Hundred Hides per Day	135
The Whittall Mills	135
David H. Fanning—Corset Manufacturer, 83 Years Young	137
Worcester: 1848-1898	139
Men Who Helped Make Worcester	143
Worcester's Railroads	150
The Blackstone Canal	151
Worcester's Trolley System	153
Worcester's Banking Business	153
Worcester's Schools for Engineers and Mechanics	155
Worcester Polytechnic Institute	155
Worcester Polytechnic Institute Graduates in Metal Trades Shops	157
Worcester Trade School for Boys	161
Fitchburg Plan of Co-operative Education	165
Let Me Work	168
Worcester Trade School for Girls	171
Worcester's Higher Institutions of Learning—Clark University	173
Jonas Gilman Clark	175
Dr. Granville Stanley Hall	175
Clark College	179
Worcester Academy	181
The Bancroft School	183
Oread Castle	185
Worcester Domestic Science School	186
Worcester—A City of Churches	187
Worcester Commercial Organizations	189
School of the Worcester Art Museum	191

	Page
Massachusetts State Normal School	193
Holy Cross College	195
Young Men's Christian Association	196
Young Women's Christian Association	197
Free Public Library	201
Worcester Art Museum	203
Worcester Music Festival	203
Worcester Woman's Club	205
The Playground Movement	206
Lake Quinsigamond	207
Masonic Order	209
Masonic Temple	209
Worcester Odd Fellows	211
Mechanics Hall	213
The Glorious Fourth Made Safe	214
The American Antiquarian Society	215
Worcester Society of Antiquity	217
Employers Association of Worcester County	218
Worcester Natural History Society	219
Worcester Agricultural Society	220
Worcester County Horticultural Society	220
Worcester County Incorporated 200 Years Ago	221
The Garden City	221
Worcester's Hostelries	223
General Washington's Visit to Exchange Hotel	225
The Bancroft Hotel	227
The Bancroft Welcome	229
National Metal Trades Association	231
Melville H. Barker—The National's G. O. M.	237
National Machine Tool Builders Association	238
National Founders Association	239
Worcester Boys Club	241
Norton Safety First Association	242
How the Big Men Dare and Do	243
Amos Whitney	245
Lucian Sharpe	247
Samuel E. Hildreth	249
Joseph Flather	251
Samuel Winslow	253
Edwin T. Marble	253
Blake Pump & Condenser Co.	254
Draper Company	255
Whitin Machine Works	256
How to Play the Game of Life	256
Worcester's Motive Power	257
Concord Bridge	257
The Bigelow Monument	258

Worcester in Its Early Days

	Page
Shrewsbury Minute Men	258
President John Adams	259
Col. Timothy Bigelow	261
George Bancroft	263
Artemus Ward	265
George Frisbie Hoar	267
Eli Whitney	275
Elihu Burritt	275
Elias Howe	277
William Morton	279
Ethan Allen	283
Dorothea Dix	285
John B. Gough	287
Clara Barton, Mother of the Red Cross	289
Luther Burbank	291
Mary Had a Little Lamb	294
Andrew H. Greene—Father of Greater New York	295
Lucy Stone—Woman's Rights Advocate	296
Hon. Stephen Salisbury—Worcester's Wealthiest Citizen	296
Edward Augustus Goodnow	296
Col. Calvin Foster	297
"No Greater Hero Than Eli Thayer"	297
Industrial Welfare Work	298
Ex-president Taft, Aunt Delia and Millbury	299
A Patriotic Creed	299
The State Armory	300
The Centennial of the American Flag	301
Worcester in the Civil and Spanish Wars	302
Geo. H. Ward—Machinist, Soldier	302
Nelson A. Miles—A Born Soldier	303
Augustus Sprague—Soldier, Citizen	305
Gen. Chas. Devens—Soldier and Jurist	306
The Vacant Chair	307
Work	308
Gen. Josiah Pickett	309
The Soldiers' Monument on the Common	310
Three Young Worcester Martyrs	311
Sergeant Plunkett	312
Hon. Alfred S. Roe	313
Two Famous Worcester Women	313
Worcester's Part in N. M. T. A. Convention Programme	314
Distances From the Heart of the Commonwealth	317

H 74 90

HECKMAN
BINDERY INC.
JAN 90

LIBRARY OF CONGRESS
0 014 110 919 4